Hunterian Lecture

ON THE

PATHOLOGICAL ASPECTS OF CERTAIN

WAR INJURIES OF THE EYE.

Delivered before the Royal College of Surgeons of England

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MR. PRESIDENT AND GENTLEMEN,—While highly sensible of the honour of delivering one of the Hunterian lectures this year, I am conscious of the fragmentary nature of my communication. While in France it has been difficult to find out how far some of the observations are original or well known; indeed, if it had not been for the kindly encouragement of Sir John Bland-Sutton I should not have ventured to make this strain upon your patience. However, by means of photographs and ophthalmoscopic pictures I will show you some of the specimens obtained and lay certain views before you, in the hope that if anything important is therein contained the facts may be incorporated in some more complete work later on.

In this lecture I have selected various observations made on certain war injuries which appear of special interest from their novelty or comparative novelty, from the light they throw on other allied conditions, or from the contrast they draw between civil and military experience.

RUPTURES OF THE SCLEROTIC.

In civil life it is well known by far the greater number of ruptures take place either immediately above the cornea, or above and internal, and are situated about 3 mm. from the limbus.

In military practice, on the other hand, though similar injuries may be seen, yet other very different ruptures are met with. For example, the cornea may be burst forwards, or we find equatorial ruptures, or the whole eye may be split into numerous petals.

In endeavouring to find an explanation for the sites of ruptures, and the difference between those caused by the various forms of blows, one is faced by a complicated subject. Much has been written and many theories put forward to account for the site of civil ruptures, but even for these no one theory has received universal acceptation. No doubt the variations both in thickness and strength of the sclerotic, and in the amount of support the globe receives from surrounding structures, are important factors in determining the site of rupture. If, however, these were the *only* factors, one would expect that all ruptures would take place in one zone. As already noted, this is not the case, and, as we shall see, the site of rupture in the majority of cases, bears a special relation both to the site of impact and to the character of the blow. The following remarks I put forward tentatively till further experience is gained.

The first important point which stands out clearly is that unless the sclerotic is actually perforated by the missile itself, rupture does not start from the point of impact, but occurs at some considerable distance from it.

This is explained by the experiments of Rauber, who found when investigating the effects of blows on hollow spheres that the resistance of the envelope to pressure is one-third greater than its tensile strength (so that, for example, the eyeball would tend to burst at some distance from the point of impact sooner than give way at this point).

If we summarise our experience we find that the site at which ruptures take place is most commonly either in the equatorial zone about the line of impact, or opposite to the point of impact—i e., at the point of contrecoup.

Also it would appear that these two sites of rupture are associated with two different kinds of blow.

I. The ruptures caused by slowly moving objects which strike the eyeball directly without penetrating globe or orbit, occur in the equator round the line of impact at a point where the globe is least supported.

This group will include the bulk of ruptures met with in civil life. They are caused by direct impact of comparatively slowly moving objects, such as stones, fists, boots, sticks, or cows' horns. The site of impact is at the anterior half of the eye, usually below or down and out, owing to the protection afforded to other parts of the eye by the brow and nose. The line of impact from a blow below the cornea will pass from below upwards and backwards; the least supported portion of the equator to that line of impact will be above the cornea—viz., the site at which civil ruptures usually occur.

II. In contrast to these we find that ruptures caused by rapidly moving missiles which pass through the orbit but do not strike the eye directly, occur at the side opposite to the point of impact—i.e., at the point of contrecoup. For example, missiles passing through the back of the orbit cause the cornea to be burst forwards, or if they have passed through the side of the orbit the rupture may be found near the equator on the opposite side.

I will now show some specimens illustrating these forms.

1. Rupture of cornea from passage of bullet at back of orbit.

2. Similar condition due to passage of bullet through both orbits. Both optic nerves were divided by missile; one at optic foramen, the other close to back of globe. In former globe was intact; in latter, though back of globe is intact the sclerotic around cornea is ruptured. Both eyes were proptosed, projecting right in front of lids; patient was complaining of such intense pain that, much against one's inclination, the two eyes were removed.

3. Large equatorial rupture on inner side of globe following passage of missile through outer side of orbit.

Causation of Different Forms of Rupture.

Our problem is to find out why the different forms of blows bring about the different forms of rupture.

When pressure is applied to the globe it would seem that there are two main methods by which rupture can be brought about.

(*a*) According to von Arlt's theory, indentation of the globe due to the impact of slowly moving missles, by lessening the diameter in the line of impact, must necessarily cause an increase in the diameter in the equator round this line. A sphere has the greatest cubic content for a given surface; any force, therefore, which distorts a hollow sphere containing a practically incompressible fluid, must bring about an increase of surface—that is to say, the envelope will be distended. The eyeball, being supported both at the place of impact and at the pole opposite to this, the distending force will be felt chiefly at the equator round the line of impact, and it is here, therefore, that distension will take place. And if the distension is sufficient to overcome the tensile cohesion of the sclerotic rupture will take place at some point on this equator where the globe is least supported.

This theory appears thus to account for the ruptures due to slowly moving bodies which strike the eye directly occurring at a site equatorial to the line of impact.

(*b*) When we come to ruptures caused by missiles passing rapidly through the orbit, quite a different set of conditions exists. The globe is not deformed by direct pressure, but is subjected to an indirect impact, or shock, due to the passage of the missile through the orbit. If the globe is not deformed the equatorial zone will not be over-stretched, and therefore von Arlt's theory will not afford an explanation.

I am greatly indebted to Professor Love, who has kindly considered the problem for me, and has suggested the following explanation.

The contents of the globe being fluid, sudden impact at one spot on the surface will cause a wave of pressure to radiate out through the vitreous from the point of impact; the more rapid the impact, the more forceful the wave of pressure; the slower the impact, the less forceful the pressure wave.

The wave of pressure will be felt most by the sclerotic exactly opposite to the point of impact, where the wave strikes at right angles to the surface, while at the sides, where the wave strikes obliquely, the pressure will be less felt. The wave of the sea which strikes the breakwater at right angles dashes much higher than the one which strikes it obliquely.

Again, where the incident wave strikes the sclerotic there will be a *wave of reflexion*, which will beat back against the incident wave. This wave of reflexion will only directly oppose the incident wave immediately opposite the place of impact; at other parts of the spherical surface the wave of reflexion will be directed more or less away from the incident wave.

Professor Love, when calculating the effects of air waves, found that where the wave of reflexion met the incident wave the pressure is enhanced, it may be as much as eightfold.

Though one cannot insist too closely on the similarity of the effects produced by air waves and those produced by waves in the semi-fluid vitreous, yet it would seem certain that a corresponding enhancement of pressure must take place in the eye at the point of meeting of the wave of reflexion and the incident wave.

It is common knowledge with what force the sea wave reflected from a breakwater meets the oncoming wave. So great is the pressure at this place that a mass of water is shot up into the air. In this instance the wave of reflexion beats back against the succeeding wave, but in the eye the wave of reflexion will beat back against the incident wave. In the open, the breakwater does not bear the brunt of this enhancement of pressure, but in a closed space, where no fluid can get away, this pressure must be borne by the walls.

Theoretically, the point of meeting of the incident and reflected waves will not lie exactly at the internal surface of the globe, but slightly nearer the centre of the eye. But this distance will be infinitesimal, and this enhanced pressure will be transmitted to, and borne by, the sclerotic immediately opposite the point of impact.

It would therefore appear that the stress on the sclerotic produced by the incident wave, plus the enhancement of pressure due to the meeting of the incident and reflected waves, will be far greater at the point of contrecoup than at any other part of the globe.

This view put forward by Professor Love seems to be highly satisfactory.

To recapitulate. The explanation for these different types of rupture would seem to be, that there are two forms of impact which have two different effects.

(1) The comparatively slowly moving blunt object striking the eye directly causes great deformation of the globe, but owing to the impact being slow there will be a weak pressure wave. This brings about ruptures in the globe round the line of impact.

(2) The rapidly moving missile passing by the side of the globe will cause little deformation, but the vibration set up by its passage through the orbit will cause a powerful pressure wave, which will bring about a contrecoup rupture.

III. We have, lastly, to consider the ruptures of the eye caused by a missile passing through the eye.

When the foreign body passes through the *back* of the eye the cornea is shot forwards and the contents ejected, which is comparable with the effect produced by firing a bullet through a canister full of water—both the lid and the water are shot upwards. Specimen 4 shows almost complete tearing away of the cornea due to a fragment passing through the posterior part of the globe and orbit.

When a sufficiently large fragment enters the eye in *front* there is an explosive effect, and the sclerotic is split into numerous petal-like lobes by radial ruptures extending backwards from the point of entrance.

The elasticity of the sclerotic will accommodate the entry of small particles without rupture. When, however, the fragment is of such a size and has such velocity that the united effect of the increase in volume caused by the entry of the body, together with the distending force of the pressure wave set up by its impact, is sufficient to overcome the elasticity of the supporting coat, widespread ruptures occur splitting the sclerotic into leaves. The point of entry determines the point of cleavage and the ruptures radiate backwards often close up to the optic nerve, so that when the sclerotic is removed it resembles the calyx of a flower. I can show you two specimens illustrating this form of rupture.

5. Where a small particle passed right through eye into orbit. The sclerotic is seen split into numerous leaves, the leaves radiating out from point of entrance.

6. Where two large splinters of wood were driven into the eye, splitting the sclerotic into two halves.

IV. In a separate group I would place certain other ruptures we have seen, which do not quite conform to the above-mentioned types.

7. A missile passing across lower margin of orbit caused an unexpected rupture. There was a vertical slit through centre of cornea, extending from limbus below to a point in sclerotic 6 mm. from limbus above.

It is difficult to explain this specimen satisfactorily. One would have expected on the above theory a superior rupture in the region of the equator. It is possible that the missile was not travelling fast and the eye was squeezed against the orbit above, and that the cornea was ruptured like the skin of a grape pressed between the finger and thumb in a line parallel to the line of impact.

8. A large mass struck the orbit up and in, fracturing frontal bone over frontal sinus. It caused a concentric rupture of sclerotic practically at equator, extending from immediately above cornea to a point in anterior inferior external quadrant. In this case the rupture runs parallel (i.e., meridional) to line of impact in equator round the line of impact, and conforms more with the civil type. One would have expected, however, that the cornea would have given way, being the least supported portion of this equator.

9. In another case a blow at lower margin of orbit caused T-shaped rupture—i.e., there was a concentric rupture 3 mm. from cornea above, from centre of which a radial split ran backwards almost to optic nerve.

Why the rupture in the equator to the line of impact runs sometimes parallel to this line, as in the tensile fractures of the skull, and sometimes at right angles to this line is probably due to the anatomical arrangement of the fibres of the sclerotic and to its varying thickness.

With the three variants—(1) thickness of sclerotic in different zones; (2) support of surrounding structures to different parts of globe; (3) site and nature of impact, above or below, outside or inside, direct or indirect, rapid or slow—one would expect considerable variety in the resulting ruptures. I do not suggest that the above theories completely explain all the ruptures that are met with. They appear to account for the main types, but we have come across several ruptures which certainly need further elucidation.

Comparison with Fractures of Skull.

It is interesting to compare ruptures of the sclerotic with fractures of the skull, though the dissimilarities of the two structures prevent the comparison being very close.

In both we have more or less spherical bodies with a semi-elastic envelope and practically incompressible semi-fluid contents. The skull has numerous bony buttresses and great variation in thickness of its walls, but no external support. The eye, on the other hand, has some, though less, variation in structure, but it is set in the conical bony-walled orbit, padded round with fat and muscles, which give it definite support for at least the posterior two-thirds of its surface.

In the skull we find three main types of fracture: (1) The "bending" fracture at the site of impact; (2) the "tensile" fracture occurring at a distance from the point struck, somewhere on the equator to the line of impact, the site being determined by the bony buttresses and the varying thickness of the skull at different spots; (3) the "explosive" fracture due to a large penetrating missile exerting a hydrodynamic force.

Explosive fractures of the skull and explosive ruptures of the sclerotic are directly comparable. Tensile fractures of the skull also correspond closely with those ruptures of the sclerotic due to the impact of slowly moving bodies which strike the eye directly. On the other hand, bending fractures of the skull cannot satisfactorily be compared with direct wounds of the sclerotic caused by the penetration of a missile, since there are no changes in the sclerotic to compare with the splintering of the skull at the part struck.

The point of special interest, however, in the comparison is the apparently rational revival of the old theory of fracture by contrecoup, a theory which has been described as "mechanically wrong, though still remaining popular."

Contrecoup ruptures certainly occur in the sclerotic, even if they rarely occur in the skull. As mentioned above, the theory put forward by Professor Love appears to explain satisfactorily their occurrence in the eye. It would be expected that neither the more resistant skull nor the more solid brain would transmit the wave of pressure so readily as the more elastic sclerotic and the nearly fluid vitreous. Thus it would be inferred that fracture of the skull through contrecoup by the mode described above would seldom take place. Nevertheless, pressure waves must necessarily be set up by severe blows on the head, and these, with the enhancement of pressure by the beating back of the wave of reflexion against the incident wave, will be at any rate partially responsible for the bruising of the brain and membranes at the pole opposite the point of impact.

CONCUSSION CHANGES.

The next subject I will take is certain of the less common concussion changes.

Rupture of anterior layers of cornea.—As a result of a severe blow on the eye one occasionally meets with cases of rupture of the anterior layers of the cornea which give rise

to straight or curved superficial striæ. If in cases of some standing microscopic section is made through such striæ, it is found that there is a rupture of Bowman's membrane and a variable number of the anterior layers of the substantia propria, and that the epithelium has grown into the gap in the same way as epithelium grows into an operation wound of the limbus or after tattooing of the cornea.

These striæ of the cornea, though often similar clinically, are different both in origin and in microscopic structure from the nearly straight, radiating, anterior striæ met with in soft ruptured eyes, which are due to *folding or crinkling* of Bowman's membrane. The latter radiate across the cornea from the line of rupture in the same way that the posterior striæ, due to folding of the posterior layers of the cornea (i.e., the ordinary striate keratitis), radiate from an operation wound when there has been much bruising of the corneal tissue or when cyclitis has supervened.

Specimens.—10. Drawing of a case of anterior striation of cornea (probably due to rupture of Bowman's membrane). 11. Rupture of Bowman's membrane, showing gap in this layer and anterior layers of substantia propria, into which epithelium was grown. 12. Ingrowing of epithelium into wound at limbus. 13. Tattooing. 14. Crinkling of Bowman's membrane following rupture of sclerotic.

Retroflexion of iris.—One specimen of retroflexion of the iris has been met with which is of interest, since the condition, though frequently described, is seldom verified anatomically.

15. The photograph shows the tucking back of iris between ciliary body and equator of lens. Such a condition would clearly give rise to the appearance clinically of "apparent iridectomy."

Rupture of ciliary body.—Mr. Treacher Collins has described the form of splitting of the ciliary body which separates the longitudinal and circular portions of the ciliary muscle. It is easy to see in the specimen (16) that such splitting carried a little further would allow the iris and the internal portion of the ciliary body to slip back, and thus be another condition which gives rise clinically to "apparent iridectomy."

Hyphæma.—This photograph (17) shows the condition of enormous distension of the A.C. with blood, the lens and iris being pushed backwards. There is marked blood-staining of the cornea.

Complete dislocation of lens into vitreous is seldom shown accurately in pathological specimens owing to the ready displacement of the lens in the nearly fluid vitreous when mounting the specimen, but in this case (18) the lens has been held in position by the surrounding blood clot.

Multiple intraocular hæmorrhages.—Hyphæma, vitreous hæmorrhage, inter-retinal and subretinal hæmorrhages are all shown, as well as hæmorrhage which has penetrated inside the lens capsule. It is easy to see what havoc to nutrition and sight would be caused by such a blow.

Concussion changes of retina and choroid.—(*a*) Commotio retinæ is frequently seen in military practice and does not differ from the civil type. Several cases have been seen where early pigmentation of the macula followed commotio, either as fine peppering or as somewhat diffuse greyish-brown spottings.

Lieutenant W. had an irregular central scotoma, which had the same pattern as the pigmented area of the retina. The scotoma disappeared in the course of about three weeks, but the pigmentation persisted (19).

The only point we have noticed but not seen described is that in the late stages of commotio retinæ, when the white haze has disappeared, for several disc diameters round the macula the retina had a peculiar striated appearance, evanescent in character—that is to say, the striæ changed their position with alteration in direction of illumination, like the rippled-sea-sand retina. This suggests that the retina is still somewhat swollen and wrinkled.

(Commotio retinæ may reasonably be compared with concussion of the brain, of which the retina is a specialised portion. The swelling is probably due to œdema, which can well be accounted for by the bruising from the pressure waves, and is similar to the imbibition of fluid by other colloidal matter.)

(*b*) The more grossly concussed fundus met with in military practice, when unobscured by vitreous hæmorrhage, affords one of the most dramatic ophthalmoscopic pictures.

In the early stages we see widespread, rich red clouds of hæmorrhage, interspersed with gleaming white patches (20).

The hæmorrhages in the retina are both subhyaloid and in the substance of the retina, and often there are, in addition, choroidal hæmorrhages forming a background.

The white spots, glistening in appearance soon after the injury, gradually fade, and in course of time their place is taken by plaques of fibrous scar tissue. It has not yet, so far as I know, been definitely ascertained what is the histological character of the white spots, and therefore what it is which gives rise to their glistening appearance. It would appear likely that they are patches of coagulation necrosis, brought about by the rupture of the retinal and choroidal vessels in the immediate neighbourhood, and thus cutting off the blood-supply and nutrition of certain areas of the retina. This view is supported by the few sections I have seen so far. The sections showed areas of necrosis, but it could be definitely stated if the necrotic areas corresponded with the white areas seen clinically.

The fibrous tissue plaques frequently have a festooned outline and they are sometimes reticulated—i.e., perforated, as it were, by round or oval holes (21).

The probable reason for this festooned edge is that the plaque has been larger at one time and roughly circular; it became attached at certain spots to the retina, where its structure was not completely disorganised, so that as contraction took place the outline became bayed between the fixed points.

It is more difficult to account for the holes which occur in the plaques; but, on the supposition that complete absorption takes place at a certain spot, retraction of the fibrous tissue round this spot will leave an oval or circular hole.

Choroidal ruptures.—As the blood becomes absorbed choroidal ruptures are frequently revealed. We find not only the usual crescentic type situated near to and concentric with a disc, but occasionally others are seen radial to the disc and usually more peripheral. In addition we frequently meet with more or less stellate ruptures, both adjacent to the part of the globe struck and also at the macula.

Combined with choroidal ruptures *areas of retinal and choroidal atrophy* occur, often so intermingled with the fibrous tissue plaques that it is difficult to be sure of the respective boundaries of the three conditions when viewed ophthalmoscopically—viz., choroidal ruptures, areas of atrophy, and newly laid down fibrous tissue.

Pigmentation is commonly seen after the first few weeks. It may be either in irregular coarse patches, fine peppering, or in bone-corpuscle deposits.

Sites at which Concussion Changes Occur.

Blows on the front of the eye give rise to changes as a rule only at the posterior pole, at or around the macula. While missiles passing through the side of the orbit may cause concussion changes at three different situations: (1) Adjacent to site of impact; (2) at macula; and (3) immediately opposite site of impact.

(1) The area which is always concussed is that adjacent to the site of impact. (This is strikingly in contrast to rupture of the sclerotic from a similar injury, which frequently takes place exactly opposite the place of impact, as already noted.) So constant is this that in certain cases of wound on one side of the head, with no apparent disturbance on the other side with the exception of some blurring of vision, the ophthalmoscope by revealing concussion changes in the eye of this side will enable us to state with certainty, not only that a foreign body has passed across the head and through the orbit on the opposite side to the wound of entrance, but also to define its course—a piece of information which may be of great value to the general surgeon.

(2) The concussion changes found at the macula from blows on the front of the eye are common, and would be anticipated as the result of bruising at the site of contrecoup, but macular changes due to blows on the side of the eye are difficult to account for and the subject needs elucidation. The greater vascularity and delicacy of structure in this region renders it in all probability more vulnerable. They are often in a group quite distinct from the disturbed area adjacent to the site of impact, and a band of normal retina may separate the two (22). Such cases have corresponding fields of vision, which show two defects (23), a central or paracentral scotoma and a peripheral defect, separated from one another by a band where vision is retained.

(Commotio retinæ may also occur in two distinct patches—one central, the other peripheral—as has been described by other observers.)

(3) In some cases of a lateral blow on the eye hæmorrhages were seen immediately opposite the site of impact, which

corresponds with the bruising of the brain at the pole opposite to the point struck, and also with the site of the contrecoup rupture of the sclerotic.

Effect of Concussion on Vision.

This is neither the place nor the opportunity to give detailed notes of cases in which the vision has been watched, but our experience may be summarised.

Concussion may produce a profound impairment of vision both in lowering the acuity and in contracting the field of vision. In the majority of instances great improvement takes place in the early weeks, and in the milder cases recovery is complete, both in field and acuity; but in the severe cases there is some permanent loss of field, and the acuity remains persistently lowered.

No doubt the early improvement is due to the clearing up of the commotio and the superficial hæmorrhage in the retina and also the vitreous hæmorrhages; but the parts of the fundus where large inter-retinal hæmorrhages or coagulation necrosis have occurred never recover, and there is a permanent defect in the field corresponding closely in shape with the disturbed area of the fundus.

It is important to remember that in severe cases of commotio, sight may be completely lost for a few days—a fact which may be of the greatest importance in deciding the fate of a wounded and concussed eye.

For example, I was called to see a man whose eye was penetrated by and contained a non-magnetic foreign body, complicated by a prolapse of iris which was of two days' standing. No P.L. The patient was ill from other wounds, and it was therefore important he should have as few anæsthetics as possible. Should the apparently useless eye be removed, or should an attempt be made to excise the prolapse and leave a fairly safe though blind eye, giving it a chance of quieting down, even though it contained a foreign body? As the eye was blind excision was decided on, but for some reason was postponed for 36 hours, by which time vision had returned so far that he could count fingers with this eye. An iridectomy was therefore done, and the eye quieted down with useful vision.

It is important to look carefully for *rupture of the retinal vessels*. These occasionally occur and their discovery will account for an otherwise inexplicable contraction of the field of vision. I will show you a drawing (24) and a field (25) of a very interesting case in which there were combined very marked concussion changes with rupture of the inferior temporal retinal artery.

Lieutenant K. C. had transverse wound of face; entrance at R. lower lid and exit through L. orbit. The L. eye was shattered and removed. The R. V. was reduced at first to the barest perception of light. Later, in about a week, it had improved to hand movements in lower part of field. Fundus showed huge clouds of hæmorrhage in retina interspersed with white spots in lower half; upper half unaffected. After two and a half years the fundus still shows extensive changes below, atrophic areas, fibrous tissue plaques extending up to macula, together with pigmentation. Also rupture of inferior temporal artery, which accounts for field being practically horizontally hemianopic. But the acuity has so much improved that he can read J.8 with the aid of a magnifying glass, and his handicap at golf is 10. He has travelled to Algiers by himself, and is still in the Army doing useful work.

Occasionally one comes across cases where the defect in the field is curiously sharply cut, with no corresponding definition in the limits of the fundus change.

For example (26), a case with a roughly quadrantic but sharply defined defect in the field was associated with a faint greyness over only a small part of the corresponding portion of retina, so that a shallow detachment was diagnosed. The affected area in the fundus showed no sharply defined border. After some weeks festooned fibrous tissue plaques with areas of atrophy and pigmentation made their appearance, showing that severe nutritional changes had taken place.

One interesting case (27) we were able to watch was that of a large, nearly circular, *choroidal hæmorrhage* at the macular region.

The ophthalmoscope revealed a central purplish-red area over which the retinal vessels ran, while in its centre was a deeper purple area, evidently the macula, which appeared as a purple morello-cherry spot (as opposed to the "cherry-red spot" seen in embolism of the central artery). In the course of a fortnight the purple area was changed to a glistening white patch of the "melting snow" variety, at the edge of which a choroidal rupture began to be revealed. Finally the white patch disappeared completely, disclosing a large crescentic choroidal rupture (28) passing just behind the macula, with no trace of fibrous tissue or indication of previous hæmorrhage.

In the early stages of this case there was a large circular central scotoma, but later, when the hæmorrhage had cleared, central vision returned, and though it could not be improved beyond 6/60, yet with a 2 mm. object on the perimeter no definite scotoma could be discovered even after careful search.

The hæmorrhage was undoubtedly choroidal and must have infiltrated the chorio-capillaris layer to give rise to the ophthalmoscopic appearance. How was it the central scotoma was not permanent? It can only be supposed that the retinal nutrition was sufficiently impaired over the hæmorrhagic area as to cause temporary abrogation of vision, but with the absorption of blood and improvement in the circulation central vision, though with poor acuity, was restored.

Comparing the concussion changes of the fundus met with in civil and military life we see a striking difference.

In *civil life*, where concussion is due to blows of direct violence on the anterior half of the eye from comparatively slowly moving blunt objects, detachment of the retina and holes at the macula are comparatively common, while severe concussion changes are rare.

In *military practice*, where the concussion is produced for the most part by rapidly moving missiles passing through the orbit, detachment of the retina and holes at the macula are infrequent, while severe concussion changes are nearly constantly present.

SUPPURATIVE CHANGES IN THE EYE.

As would be expected from the large number of penetrating wounds of the eye in warfare, suppuration is all too commonly met with. But panophthalmitis, whether exogenous or endogenous, following war wounds is usually not of an acutely infectious type. There is seldom much pain, and tenonitis, with consequent proptosis and chemosis, is seldom marked.

In the *endogenous* or *metastatic* forms we have been much struck by the difference in the clinical picture, according to whether the anterior or posterior vessels of the eye received the septic embolus.

In cases where the anterior half of the eye is first infected there is early exudate in the A.C. and anterior portion of the vitreous associated with marked discolouration of the iris. Thus in the specimen shown (29) there was to be seen clinically a plug of exudate in the pupil, and a peculiar white ring of exudate like a collar all round the angle of the A.C., together with a whitish-green discolouration of the iris.

While in cases of primary infection of the choroidal or retinal vessels the first sign is a general diffuse œdema of the bulbar conjunctiva, associated with loss of fundus reflex and dimness of vision; there is no discolouration of the iris, and no sign of exudation in the anterior part of the eye in the early stages. In the course of about 24 hours there is slight proptosis, and the loss of sight is practically complete.

In eviscerating the globe in one case the anterior portion of the vitreous was quite pellucid, and for a moment the diagnosis seemed to have been wrong; but on scraping out the retina and choroid purulent masses appeared, which indicated the posterior site of infection.

Exogenous panophthalmitis provides the bulk of our specimens and is due to penetrating injuries.

1. Sometimes the vitreous shows a nearly even infiltration and as it shrinks the position of its greatest adherence to surrounding structures is clearly defined—viz., the pars ciliaris and the optic disc (30). Fuchs has pointed out that purulent infiltration spreads out into the vitreous from these two situations. Some of the specimens show well the early involvement of the papilla, by, as it were, a fountain of pus pouring out into the vitreous from the disc (31). In others one sees the purulent thickening of the retina immediately around the disc to be quite separate from the infiltration in the pars ciliaris (32).

2. When the infective process is mild and the inflammatory changes approach the plastic type, the vitreous, which may have become one homogeneous purulent mass, gradually shrinks, and in consequence the retina becomes detached. One specimen (33) shows well the dragging forward of the retina from just behind the ora serrata which, on section of the eye, gives rise to a peculiar configuration to its outline.

In pathological departments this dragging forwards of the retina from the ora towards the back of the lens, as the result of plastic cyclitis, is well known, but clinically it is not universally recognised. Thus occasionally after a penetrating injury, when all seems to be going fairly well except for continued injection of the eye, one sees, a week or ten days after the injury, a white reflex behind one portion of the lens. It may wrongly be inferred that panophthalmitis has set in; the eye is removed, but on section and microscopic examination it is found that there is no panophthalmitis, but the retina has been drawn forwards at this spot, by the shrinking of plastic exudate, from the ora to the back of the lens.

3. The absence of continuity in certain specimens you have seen, between the exudate at the O.D. and that at the anterior part of the eye, shows that the infection must be carried to the O.D. and that the inflammation has not spread

simply by continuity. This must take place by the transference of organisms or toxins along the lymph channels in the vitreous; and Cloquet's canal, forming a direct means of communication, is probably the main channel.

Such cases come into line with those of optic neuritis without infiltration of the vitreous following severe infective ulceration of the cornea, which are met with fairly often in the laboratory but seldom guessed clinically.

We may suppose the toxic matter passes through the cornea into the aqueous, in the same way as atropine or cocaine is absorbed, and from here it can pass into the vitreous and along the flue-like Cloquet's canal and set up irritation at the disc, exactly as in Giffard's experiments, the vermilion granules, injected into the front of the eye, found their way on to the physiological cup.

The irritating substance, having once arrived at the disc, may set up optic neuritis, and it may also cause inflammatory exudate to be poured out either into the vitreous or into the inter-retinal space immediately round the disc (34).

Exudate into the vitreous may be suppurative, as we have seen, or it may be plastic, in which case it may be replaced by fibrous tissue, which on shrinking will cause folding or even detachment of the retina.

On the other hand, contraction of the exudation in the inter-retinal space may cause the peculiar rosette-like folding of the retina occasionally met with. (Specimen (35) of rosetting of the retina at the O.D. following membranous conjunctivitis, in which there was no obvious continuity between the inflammation in the cornea and that at the back of the eye, the vitreous being quite clear.)

Such inflammatory involvement of the optic nerve with consecutive atrophy may well explain the surprising loss of sight in certain cases following ulceration of the cornea, which is out of proportion to what one would expect from the corneal opacities.

CHANGES IN THE VITREOUS.

When examining the vitreous in eyes which have been penetrated by a foreign body one is struck by the extraordinary variety of the changes that are met with. In some the track of the foreign body is clearly defined, either by blood, by pus, or by a fibrous band, or, again, the whole vitreous, more or less hæmorrhagic and infiltrated, may be found shrunk up around the track, but remaining attached (or as it were "pegged out") to the retina at a point at which the foreign body struck.

The foreign body, by penetrating the vascular coats of the eye from without or striking the retina and choroid within, often causes a hæmorrhage to take place at one or both spots. Such a hæmorrhage may merely follow the track of the foreign body, but often it is much more widespread and occurs in fans which correspond with no known structure of, or lymph channels in, the vitreous, which fans may be seen with the ophthalmoscope. Just as a bullet when passing through a limb causes splits in the muscles and fasciæ radiating from its track, into which blood and infective material will find their way, so it would seem a foreign body passing through the jelly-like vitreous may split this body in various planes into which blood and, at a later date, infective material may also spread. This seems a rational explanation for the widespread fans and planes of hæmorrhage and fibrous tissue that are met with, which do not correspond with any known lymph passages in the vitreous.

The vitreous, as we have seen, becomes adherent to the retina at the point where a foreign body strikes; yet allowing for rebounding of a foreign body more than once or twice, or the possibility of more than one or two foreign bodies being present, we come across many specimens where the vitreous has been pegged out at too many spots to be accounted for by either of these causes. Hæmorrhages from the retina which burst through the hyaloid into the vitreous will doubtless be a cause of adhesion between the two structures. One of the specimens (36) shows a conical hæmorrhagic tip to a vitreous adhesion, which supports such a view. The hæmorrhage being only at the point of the adhesion, it is probable the blood came from the retina.

It would seem probable that when rifts of the vitreous caused by the penetration of a foreign body reach the retina, either blood may follow up along the rift or a new hæmorrhage may start from the retina, and thus also a connecting link is formed.

Shrinking of the vitreous and absorption of the various inflammatory elements may go on till all that is left of hæmorrhage and infiltration is a series of strands or fans of delicate fibrous tissue attached in front to the back of the lens, or ciliary body, and behind to the retina (37).

Occasionally these strands are exquisitely delicate, as in the specimen shown (38), merely branching threads with a variable amount of pigment deposited on or in them.

Where the fibrous bands are attached to the retina (39) they may by their shrinking exercise considerable traction, bringing about puckering or folding of the retina; or actual detachment may occur (40), provided sufficient exudation has not been poured out to bind together the retina, choroid, and sclerotic.

It is probable also that certain of the tears and holes which occur in the retina are due to the attachment and traction of vitreous bands.

In any case fibrous vitreous bands must be looked upon as a decided menace, and one must therefore avoid as far as possible any procedure in ophthalmic surgery which is liable to cause a vitreous hæmorrhage. Thus, in removing foreign bodies from the eye, this is one of the strongest arguments for drawing at any rate the smaller magnetic particles forwards into the A.C. and removing them through an incision in the avascular cornea rather than withdrawing them through a new incision made in the vascular sclera and choroid, which very probably will create a fresh vitreous hæmorrhage.

It is recognised, of course, that not every vitreous hæmorrhage gives rise to fibrous tissue, and one may digress for a moment to discuss this point.

Fibrous tissue may follow hæmorrhage both from penetrating and non-penetrating injuries. It appears to follow mild infections fairly regularly, but infection, in the ordinary acceptation of the term, is not necessary for its formation.

As Parsons has pointed out, the fixed cells of the vitreous will not by themselves produce fibrous tissue; fibroblasts from already formed connective tissue must be present, and they can pass in either from the retina or choroid after rupture in the internal limiting membrane of the retina or the hyaloid, or both, has been brought about. But it is, so far as I am aware, unexplained.

(1) Why in certain cases of recurring vitreous hæmorrhage in young people described by Eales, fibrous tissue fans develop, while in others even large hæmorrhages clear up, leaving no trace of fibrous tissue.

(2) Why a subhyaloid hæmorrhage at the macula, in the specimen shown (41), left a star-shaped plaque of fibrous tissue at this spot, which by its contraction caused crinkling of the hyaloid; while, as a rule, such subhyaloid hæmorrhages clear up completely.

(3) Why choroidal ruptures are not followed by deposit of fibrous tissues.

(4) Why in glaucoma, hæmorrhages from the disc sometimes are followed by fibrous tissue development so that the cup is filled in, and even a large nipple-like projection extends into the vitreous.

EFFECT PRODUCED ON RETINA AND CHOROID BY PENETRATING FOREIGN BODIES.

A small fragment, after entering an eye, may pass on into the orbit, or it may strike and rebound off the retina, coming to rest far from its original track. This rebounding of foreign bodies in the eye is quite comparable with the bouncing of missiles inside the skull, an astounding instance of which was kindly given me by Colonel Percy Sargent, where a small fragment, after entering the skull, actually bounced twice on the inner surface of the cranial cavity before it came to rest after a curiously complex course through the brain substance.

I can show you drawings of a case of which the only explanation I can offer is that a fragment rebounded twice on the retina.

42. Shows scar in sclerotic at its entrance on inner side of cornea.

43. The fundus shows two scars on retina, one on inner, the other on outer side of disc, bridged across by a fan of fibrous tissue which can be traced forwards towards wound of entrance. The small inset on right shows foreign body glistening like a jewel in the blood-stained vitreous, situated far forwards and on outer side.

44. X ray localises foreign body at a spot which corresponds with the ophthalmoscopic estimation; and shows no other F.B. in orbit.

45. Diagram of the supposed track—viz., that the foreign body entered the eye on the inner side in front, struck the retina on inner side of disc, bounced across to outer side, and was again reflected, but this time forwards.

46. The field of vision shows two scotomata situated in the horizontal meridian, corresponding with the two scars on the fundus.

When a foreign body strikes the retina it will certainly bruise and in most instances cut it.

I will show you microscopic sections of a case at Moorfields in which a foreign body bounced on the retina and later was removed by means of Haab's magnet. The spot where the foreign body struck the retina was indicated by attachment of the vitreous (47, 48). The sections through the spot show the retina to be divided, and the gap thus caused is occupied by a plug of newly formed fibrous tissue which is continuous with the shrunken and hæmorrhagic vitreous, in which fibrous tissue is beginning to replace the blood.

In some cases the retina may become folded and puckered at the site struck (49).

Correlation of Lesions with Defects in Field of Vision.

The delicate localised lesions of the retina are in reality wonderfully neat physiological experiments, for which in peace-time it would be difficult to obtain either the subjects or a licence.

Though Usher, Dean, and Parsons, among others, by dividing portions of the retina in animals, have been able to trace out the course of the degenerated fibres in the optic nerve, they were unable to correlate these lesions with the defects in the fields of vision of the dogs and rabbits they operated upon.

But in these war experiments on man we *can* correlate the visible lesions with defects in the field, though we are unable to complete the examination by tracing the course of the degenerated fibres.

Thus we find that lesions above or below the horizontal plane cause a defect in the field out of all proportion to the local disturbance—i.e., there is a "distribution defect," in addition to the local defect due to the lesion. This is due to the lesion having not only damaged the spot which is struck, but has involved nerve fibres which were passing on to a more peripheral portion of the retina.

The distribution defect is fan-shaped from the point corresponding with the lesion and extending towards the periphery. The nearer the lesion is to the disc the greater the blind sector and vice versa, which agrees with the accepted distribution of the nerve fibres in the retina.

When the lesion occurs in the horizontal plane there is no "distribution defect," but the loss of the field is limited to the area corresponding with the lesion, as would be expected, for the fibres supplying the retina in the horizontal line arch round from the disc to their destination, and therefore these lesions would only involve the nerve fibres at their termination.

As an example we may take the case already described when the foreign body bounded twice on the retina. The defect in the field was two scotomata corresponding with the two lesions of the retina with no distribution defect or peripheral loss.

These sector defects following bruising of the retina are strikingly similar to the sector defects in the field following solitary patches of choroiditis described and worked out with such care by Hepburn, but I venture to disagree with his explanation.

He suggests that the inflammation in the choroid has not only blocked the choroidal circulation at the site of the patch, but thereby has cut off the blood-supply of a corresponding peripheral sector of the choroid; and in consequence the retina degenerates, bringing about a similar sector defect in the field of vision.

Such a theory demands not only that the choroidal circulation is divided up into separate sectors corresponding with each vessel, but that the circulation is terminal—that is to say, no anastomosis exists between the various sectors—neither of which hypotheses is proved, nor is it, in my judgment, probable. It has long been recognised that the ciliary and choroidal circulations anastomose fully, and therefore blocking of one short ciliary artery is not likely to bring about an anæmic area. Also, if such a condition did occur the ophthalmoscope would surely reveal some difference in the appearances of the functioning and non-functioning choroid; and he admits there is none.

It would seem more probable that the sector defect in the field in these cases is due to an involvement of the nerve fibres by the inflammatory process as they pass over the patch of choroiditis, and therefore that the visual sector defect is one of nerve distribution, and not associated with any supposed distribution of the choroidal vessels.

Case of Complete "Ring Field."

The last case I wish to bring to your notice is one of great interest, for which I am much indebted to Captain W. Stirling, R.A.M.C. A minute particle perforated the cornea, iris, lens, and vitreous, and struck the optic disc, a "bull's-eye."

There is an adherent leucoma, a hole in the iris (50), an opaque track through the lens (51), from which there extends a delicate fibrous band in the vitreous to the mass of inflammatory tissue covering the disc and parts immediately around (52). X rays prove the presence of a foreign body on the disc. The rest of the fundus is normal.

The astounding fact is that this lesion has caused a nearly circular *ring field* (53); that is to say, there is a very large central defect, and considerable peripheral contraction, between which is a nearly circular band in which vision is retained.

If we are correct, as seems likely, in thinking that the nerve fibres in the outer third of the disc supply the macular area, and the most peripheral fibres on the disc supply the retina immediately around, while those in the centre are the long distance fibres which supply the periphery of the retina, then the fibres in the intermediate horseshoe zone on the disc must pass to that portion of the retina corresponding with this "ring field" (54). It would have been almost unbelievable that a complete ring field could have been left, yet it has to be accepted as fact, for the field has been taken most carefully on two separate occasions at an interval of several weeks, and the two fields are practically identical.

I will not weary you with any hypothesis of how this foreign body caused these bundles of fibres to suffer. For the moment the important fact is—*that a wound of the disc can lead to a (double) concentric defect in the field.*

Three important points are suggested by this case—namely:—

(1) That the nerve fibres which are in association with the various concentric zones of the retina, and which will be distributed to the corresponding zones in the appropriate superior and inferior calcarine areas of the occipital lobes, are arranged in definite zones in the optic nerve.

(2) A second interesting point is that this case throws light on those cases with concentric defects in the field which have been attributed to, but not definitely proved to be the result of, disease of the optic nerve, such as retro-bulbar neuritis (e.g., Hancock's case of ring scotoma following lightning stroke). This case, with the definite physical lesion of the nerve which can be demonstrated, substantiates the view that these other cases may also be due to a nerve lesion.

(3) But perhaps the most suggestive interest of the case is the possible light it throws on the etiology of diseases associated with concentric defects in the field, such as retinitis pigmentosa. Several have tried to explain the ring scotoma in this disease by the "water-shed" theory of the choroidal circulation, but this theory does not account for the variable position of the ring, nor the cases where from the beginning there is no ring scotoma, but either peripheral contraction or a gradually increasing central scotoma.

This case gives support to the suggestion which Hancock and I, and possibly others, have put forward, that retinitis pigmentosa may be primarily a degenerative disease of the nerve. On such a theory all the various defects in the field can be well accounted for. There are doubtless obvious difficulties which have to be explained, such as why the pigmentation of the retina should occur with this form of nerve atrophy and not in another. Nevertheless, I think this view is worthy of consideration, supported as it is by this very unusual case.

CONCLUSION.

Before closing my lecture I should like to express my cordial thanks to Miss Glazebrooke and Captain Hopwood, R.A.M.C., for the care they have taken over making lantern slides from my negatives; to the Committee of Medical Research for allowing Sergeant Maxwell to make the beautiful ophthalmoscopic drawings for me; and to Sergeant Maxwell himself for all the care and skill which he has displayed.

METROPOLITAN HOSPITAL SUNDAY FUND.—Up to the end of last week the total contributions received amounted to £64,000.

Major-General Charles Henry Burtchaell has been elected an honorary Fellow of the Royal College of Physicians of Ireland.

WAR DEAFNESS,

WITH SPECIAL REFERENCE TO THE VALUE OF VESTIBULAR TESTS.

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HAVING had the opportunity of examining a large number of men whose hearing has suffered during the war, we venture to hope that a brief record of our experience may prove of interest.

Classification.

The cases we have observed naturally fall into four categories:—

1. Those who heard well previously and in whom deafness had resulted from injury of the internal ear alone.
2. Those who heard well previously, but in whom middle-ear suppuration as well as injury of the internal ear had supervened.
3. Those in whom there previously existed deafness, but in whom the tympanic membrane remained intact, the deafness having become aggravated.
4. Those who previously suffered from chronic middle-ear suppuration.

Classes 3 and 4 may be dismissed in a few words. It goes without saying that patients coming under these headings often become more deaf after exposure to concussion, and so in cases of middle-ear or nerve deafness an increase of this symptom was often observed. In the course of our work we have seen very many soldiers with middle-ear suppuration, and it has occurred to us that the advantage of enlisting men who suffer from this condition is open to question. It is perfectly true that many of them hear sufficiently well to make useful soldiers, but it is also true that the existence of a condition which may at any moment give rise to serious symptoms makes it possible for them, if they so desire, to spend much of their time in hospital. If, for instance, a patient with chronic suppuration complains of headache, giddiness, and nausea even the expert will often find it difficult to distinguish between real illness and malingering. Moreover, it is impossible for a soldier on active service to have his ears properly attended to unless very special and expensive provision is made for this class of case.

Classes 1 and 2, in which, so far as could be ascertained, the hearing was previously perfect, afforded data of great interest. In the former the deafness was due solely to lesion of the labyrinth, while in the latter, although nerve deafness existed, there was also a second factor in the presence of chronic middle-ear suppuration, due to the fact that the explosion which had injured the cochlea had at the same time ruptured the membrana tympani. We have been much struck by the number of cases in which, where this occurred, the patients gave histories of having been buried by a shell explosion. Presumably under such circumstances there is greater probability of septic material getting into the middle ear. In some of these there were not only suppuration but granulations and even polypi as well.

Tests Employed: Vestibular Reactions.

In examining cases of primary concussion deafness, with or without suppuration, we adopted the various tests now in use.

Thus, bone conduction for a tuning-fork of medium pitch was noted, the hearing power for low and high tones was tested with tuning-forks, the Galton whistle, and frequently with the monochord as well. Vestibular tests, too, were employed in all the cases. In testing the hearing for the voice the opposite ear was excluded by employing Barany's noise apparatus. It is now recognised that if a normal ear be syringed with cold water a nystagmus results, the quick movement of which is away from the ear operated upon and which is most easily observed by making the patient look in this direction. This usually comes on after the water has been running into the ear for from 40–50 seconds, but too much importance cannot be attached to this time, as individuals react differently. Again, if a normal person be placed upon a revolving chair and rotated ten times in 10 seconds a nystagmus, the quick movement of which is opposite to the direction of rotation, will result and last from 20–40 seconds.

Now it has been suggested that if there is deafness following concussion, and if the vestibular tests give a normal result, we are therefore entitled not only to arrive at a favourable prognosis, but even to assume that the deafness is of purely functional origin. This proposition is very unlikely to appeal to anyone who has had opportunities of studying ear disease and utilised such opportunities intelligently. To such an one the evidence of his own pre-war experience will supply ample refutation. Space does not permit us in this communication to enlarge upon the many reasons that make the hypothesis untenable, but we hope to adduce proof that these vestibular tests—interesting and important as they no doubt are—must be considered of subsidiary value either in estimating prognosis or detecting malingering in cases of concussion deafness. We have thought it well to bring the matter forward as shortly as is compatible with clearness in a journal accessible to the medical profession as a whole rather than in one devoted to otolaryngology, because we believe that very grave injustice might be done if the dictum were accepted that given a man deaf from explosion, if he reacts to the vestibular tests in what his examiner considers a normal manner he is therefore either a malingerer or the victim of hysteria.

Group A.

Let us in the first place give brief records of five cases in which suspicion of either hysteria or malingering might be justified.

1. Blown up; unconscious; temporarily totally blind and deaf. When examined heard loud voice in each ear at 1 foot; deafness of the nerve type; cold water induced nystagmus in 60 seconds on the right side and in 40 seconds on the left, while rotation produced after nystagmus lasting 25 seconds both from right to left and from left to right. The suggestion of possible hysteria is furnished in this case by the history of blindness and total deafness immediately following the injury.

2. Shell fell in trench; was uninjured, but quite deaf for two or three days, and also lost his voice. The latter returned and hearing is slowly improving. Was giddy after the explosion. When examined could hear a shout near the right ear and a very loud voice near the left; deafness of nerve type. Cold water produced reaction in 20 seconds from the right and 30 seconds from the left ear.

The loss of voice is in this case suggestive of hysteria.

3. Exposed to shell explosion; since has suffered from total deafness and loss of speech; general symptoms of shell shock. Both ears completely deaf to voice, tuning-fork by air or bone conduction, and Galton's whistle. Rotation from right to left had to be stopped at eight revolutions owing to hysterical manifestations, but only very slight nystagmus resulted. From left to right ten revolutions were tolerated and the after-nystagmus lasted only 12 seconds.

There was certainly hysteria in this case, as evidenced by the aphonia.

4. Knocked over once and buried twice during an advance. Deafness was complete at first, but now varies a little. Had shell shock, but now recovered. When examined heard only a shout near either ear, but he seemed to hear better when discussing his ailments. Bone conduction lost; Galton's whistle not heard; rotation right to left produced nystagmus lasting 35 seconds and from left to right 75 seconds.

Hearing better in conversation suggested possible malingering.

5. Buried by shell explosion and since then left ear has been deaf. Discharge said to come from right ear, but hearing on that side fair. Pain said to occur in right ear when discharge stops. Right tympanic membrane normal, but some impetigo of meatus. With the right ear hears a low voice at 15 inches, but with the left only a shout near is heard. Tuning-fork tests unsatisfactory as regards both ears and result in some obvious misstatements. Galton's whistle not heard by left ear. Rotation from right to left caused nystagmus lasting 10 seconds and from left to right 17 seconds.

A consideration of these cases, which, owing to collateral circumstances, might furnish just suspicion of the presence of a functional or malingering element, does not in any way justify the assumption that a normal vestibular reaction confirms this diagnosis. While Cases 1, 2, and 4 showed good and, in the last, even excessive reaction, it was found to be defective in 3 and 5. Again, in 4, although the hearing power of each ear was equally involved, one vestibule was much more sensitive than the other. It is worthy of note that in 5 both reactions were below normal, but that obtained from the deaf ear was the more pronounced.

Group B.

In the following cases there was diminished vestibular reaction.

1. Blown up by shell; total deafness in both ears. Cold irrigation caused no reaction after 140 seconds on the right, while nystagmus followed in 50 seconds on the left. Patient treated by pilocarpine, and after a fortnight could hear a low voice at 1 foot on the right side, while the monochord was perceived up to 12,000. Now vestibular reaction was produced by cold syringing in 35 seconds. The left ear remained as before.

In this case, therefore, the ear which *gave no* reaction improved, while the other *did not*.

2. Wounded by shell explosion. Since then deafness and tinnitus in both ears. By each ear conversational voice heard at 1 foot. After 90 seconds of cold irrigation no nystagmus could be produced from either ear.

3. Shell burst in front of him, followed by immediate loss of hearing in both ears. Left ear improved, but not the right. Hears a loud voice

at 1 foot with the right ear and a distinct voice at the same distance with the left. No nystagmus resulted after 90 seconds' irrigation of either ear, and rotation also was without effect.

4. Blown up; was "blinded and unconscious" for 16 hours; afterwards found he was deaf in his right ear and that the hearing in his left "comes and goes." The right tympanic membrane was chalky and cicatrised, while the left was opaque. On the right a loud voice was not heard, while on the left a low voice was heard at 18 inches. Rotation from right to left and from left to right produced no nystagmus in either case.

5. Blown up by shell explosion; was stone deaf and had discharge from both ears immediately afterwards. The left ear has recovered slightly, but the right has remained completely deaf. The right membrane showed a large dry perforation, while the left was indrawn. By the right ear a shout was not heard, while by the left a distinct voice was heard at a foot. After rotation from right to left and left to right no nystagmus resulted in either case.

These five cases afford, in our opinion, definite proof that the vestibular reaction is of no decisive value in either diagnosis or prognosis. It will be noted that in the first it was the ear from which no nystagmus could be produced which recovered, while the others give ample demonstration of the fact that while vestibular reaction may be in abeyance the cochlear function may be more or less maintained. Whether we are to assume that the explosion was the cause of interference with the functions of the semicircular canals, or that for some reason the patients were defective in reaction, does not in the least affect the argument.

Group C.

In the following cases there is a history of head injury, and in them, therefore, we may assume that the evidence is in favour of organic rather than functional trouble.

1. Wounded behind left ear in August, 1915. Has suffered from deafness and tinnitus since: was very giddy at first. Hearing normal on right side, but by the left ear only a very loud voice near the ear was heard. Cold water produced nystagmus on the right side in 30 seconds and on the left in 15 seconds.

2. Shrapnel injury to right side of face; right ear has been deaf since. A shout was not heard by the right ear, while on the left hearing was normal. From both ears nystagmus was produced in 20 seconds by cold water.

3. Shrapnel injury to head, followed by deafness which has been getting worse; right auricle torn. By the right ear only a shout was heard at a foot, while on the left a whisper was heard at the same distance. Cold water produced no nystagmus from either ear after 120 seconds.

4. Wounded by bullet entering just behind left mastoid and coming out through the neck on the same side; not unconscious; noticed deafness a little later when trying to hear a watch. The hearing of right ear is normal, but on the left a very loud voice is only heard at a foot. Cold water produced nystagmus in 20 seconds on the right and in 40 seconds on the left.

5. Bullet entered left eye and came out one inch below the zygoma. Left eye shot out and blind in right eye when he regained consciousness. Marked deafness in both ears for some weeks. Left improved, but right remained deaf and was affected by tinnitus. The right ear was quite deaf, a shout not being heard, while the left heard a whisper at 1 foot, but there were symptoms of nerve deafness on this side (tuning-fork tests and monochord 9000 only being perceived). This case was examined nine months later, but the hearing remained as above. The vestibular reaction was exactly equal, cold water causing nystagmus in 32 seconds on each side.

6. Wounded in left cheek and blinded in left eye. Since has suffered from deafness in left ear and giddiness. While a low voice was heard at a foot by the right ear, a shout was not perceived by the left. Tuning-fork and monochord indicated complete nerve deafness on the left and partial on the right (11,000). Cold water caused nystagmus on the right side in 40 seconds and on the left in 30 seconds.

With the possible exception of Case 5, in which unfortunately the condition of the right eye does not seem to have been especially noted or inquired into, we may with reasonable certainty exclude all question of functional trouble. It will be observed that in Case 4 the vestibular reaction was better marked from the good ear. In Cases 1 and 6 this was, however, reversed, while in Cases 2, 3, and 5 the vestibular reactions were the same in both ears, varying from induction of nystagmus after 20 seconds of cold water (Case 2) to apparent extinction of vestibular reaction (Case 3), where after two minutes no result was obtained from either ear. It must also be noted that in this case one of the ears retained a good amount of hearing power.

Group D.

In the two following cases wounds were succeeded by middle-ear suppuration as well as nerve deafness.

1. Gunshot wound of face: bullet entered below right eye and came out behind right ear. Deafness and discharge on this side followed. The right tympanic membrane showed perforation and discharge, while the left was normal. By the right ear a shout was only just heard, while the hearing of the left was normal. Rotation from right to left and from left to right produced nystagmus lasting 16 seconds in each case.

2. Wounded by shrapnel on left side of neck and has been deaf since; was very giddy at first, but this has gone off. The left ear shows granulations and discharge, while there is a scar below the left mastoid. The hearing on the right side was good, but a loud voice was not heard by the left ear. Rotation from right to left caused nystagmus lasting 20 seconds, but that from left to right caused no nystagmus.

It will be noted that in Case 1 both vestibules reacted equally, but that in Case 2 that corresponding to the affected ear failed to respond. Are we, therefore, to conclude that Case 1 is suffering from hysteria or is even malingering, while we accept Case 2? As the results we have given seem to us to furnish absolute proof that the condition of the vestibular apparatus gives us no trustworthy guide to that of the cochlear, we must answer this question by an emphatic negative.

Conclusions.

While we have not been able to prove in any of the cases that we had to do with either functional deafness or malingering, we have shown that in Group A, where, perhaps, one or other of these conditions might be suspected, vestibular reaction was sometimes good and sometimes defective. Turning now to Group B, the first thing to be noted is that in the only case of partial recovery after concussion deafness we have met with, it was the ear in which vestibular reaction was absent which recovered. Again, the other cases of this series furnish ample evidence that vestibular reaction may be lost, while the cochlear functions are more or less active. In Group C we find unilateral deafness, the hearing in the other ear being good or fair. In only one of them was vestibular reaction more marked in the better ear; in two this was reversed and in the others it was equal. In one of the latter no reaction was obtainable from either ear, and yet the hearing power on one side was good.

From our experience and from analysis of the cases we have examined we conclude:—

1. That concussion deafness is generally due to some organic change.
2. That the prognosis is usually bad.
3. That the results of the vestibular tests can only be utilised in conjunction with information derived from other sources. Thus, if the patient shows other hysterical symptoms, vestibular tests may perhaps under certain circumstances help diagnosis; but to state that they do more than this is, in our opinion, misleading and dangerous.

GUNSHOT FRACTURES OF FEMUR:

SOME METHODS OF REDUCING SERIOUS DISPLACEMENTS.[1]

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TREATMENT of compound fractures of the femur on the Thomas's splint has been so generally adopted, and has so many advantages both as regards comfort of patients and easy performance of dressings with least amount of pain and disturbance of fragments, that the following remarks apply only to patients treated in this way.

Displacements.

"Serious" displacements will come under one of the following heads:—

1. Shortening.

This is often due to obliquity of fracture or to overlapping of main fragments. The most important way of overcoming these displacements is by efficient extension.

For over a year I have used steel springs to obtain extension in cases of fracture of long bones of leg treated on Thomas's splints. The springs used in ordinary spring mattresses answer quite well. When used for a mattress one end of the spring is naturally in the form of a hook, which can be slipped over the end of the splint, while the other forms a ring through which the extension bands can be threaded. (Fig. 1.)

If these bands do not pass round the side bars of the splint and are not attached to them none of the pull on the leg will be lost by friction. The actual pull exercised can be estimated by measuring increase in length of spring, having previously measured the lengthening obtained by pulling the mattress spring against a spring balance which has a dial showing amount of tension expressed in pounds. If small spring balances about four inches long can be obtained they may, as suggested to me by Lieutenant-Colonel Fairrie, R.A.M.C., be used on the splint instead, and the amount of tension at any time can be seen at a glance.

Springs are easily attached and have distinct advantages over other methods of obtaining extension.

[1] Abstract of a paper read before the Tréport Medical and Surgical Society.

Spring extension is easily applied, usually little or no readjustment is required, and any pull up to 15 lb. can be obtained or more if thought necessary, though this is rarely called for.

2. Rotation.

One of the drawbacks to the Thomas's splint, both for arm and leg, is that rotation of the limb may take place after the splint has been applied. A simple and effective method of preventing rotation, or of fixing the leg in any degree of rotation which position of fracture renders desirable, is that brought forward by my colleague, Captain H. M. Anderson, R.A.M.C. This consists in the use of two small lateral supports, about 4½ in. by 3½ in., cut from a sheet of Gooch's splinting. These supports are made in pairs, and to each two tapes and buckles are fastened by a couple of drawing-pins. If the tapes of one are fixed near the centre and of the other near upper and lower margins they will clear one another during fixation.

These supports are held against the lateral aspects of the leg which is in the desired position, either at level of knee or just below it, a jaconet-covered pad of gamgee tissue rather larger than the support being placed between each and the limb to avoid pressure. The tapes are now passed behind the leg and beyond opposite bar of splint and are then securely fastened by buckles. Not only is rotation prevented, but the limb is also more securely attached to the splint.

Generally speaking, the leg should be fixed with a slight degree of external rotation. The lateral supports should not be applied until after the extension has been obtained. The supports and their mode of application are shown in Fig. 1.

3. "Sagging."

This is a deformity all too frequently seen. It may occur with fractures of any part of shaft of femur, but is especially common in fractures of middle and lower thirds. Sagging

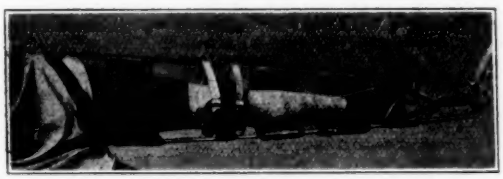

FIG. 1.—Illustrating the method of obtaining extension by a steel spring and the lateral splints for preventing rotation. The tapes attached to the outer of the two small lateral splints are coloured black.

may sometimes be prevented or remedied by careful attention to adjustment of supports which suspend thigh from bars of Thomas's splint. These should be brought as near the wounds as possible, and if removal for dressings is necessary support should be given, if possible, by temporary sling of gauze. Not infrequently, in spite of all care and attention, a certain amount of sagging will occur.

Sagging is likely to produce serious permanent disability. It is commonly associated with some lateral displacement of the main fragments.

4. Displacements of comparatively small fragments at the ends of the bone to which powerful muscles are attached.

These displacements may be very difficult to rectify, especially where there is much comminution and severe septic infection, and there is then a great probability of mal-union and a bad functional result.

(*a*) If at the upper end of shaft a fracture should occur just below the small trochanter the small upper fragment will be flexed by action of ilio-psoas and abducted and externally rotated by action of muscles attached to great trochanter. The upper end of the lower fragment will be behind and to the inner side of the upper, and is also displaced in an upward direction, a position, in all probability, largely due to the weight of the limb.

(*b*) When the shaft of the femur is fractured in its lower third just above condyles the lower fragment is generally displaced and rotated backwards, sometimes excessively so.

[The usual methods of treatment were criticised and causes of failure pointed out.]

Treatment by Direct Wire Suspension and Traction.

The great difficulty of rectifying the displacements described above, especially in the more severe and complicated cases, suggests the desirability of some method of mechanical fixation applied directly to the fragments rather than to the limb.

Plating of recent septic gunshot fractures has been condemned, and, I think, rightly so. Even in the late stages of treatment after mal-union the extensive disturbance of soft parts necessary and the denudation of periosteum from a large area of bone are liable to be followed by a renewed outburst of severe septic infection.

I have recently treated a number of cases in which "sagging" was present to a marked degree, and of fractures of upper and lower part of shaft with typical displacements already described, by a method in which the straight Thomas's splint and the ordinary methods of obtaining extension and preventing rotation are used, and which can be employed in conjunction with any method of suspending or supporting the splint. The principle of this method, which has been called "wire suspension and traction," is that a loop of silver wire is manipulated round the free end of the displaced fragment, which is then pulled into position, and maintained so by attaching the wire to a rigid arch passing over the limb between the two bars of the splint.

Before employing this method a careful examination of stereoscopic X ray plates, or of plates showing the fracture in two planes at right angles, is essential.

The position of the fracture, nature and extent of displacement, and amount of comminution must all be determined, for upon these points will depend the shape and kind of loop required, whether one or both fragments will require suspension, and also direction of pull necessary to maintain fragments in position.

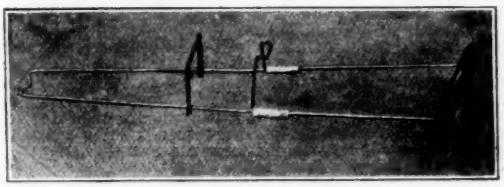

FIG. 2.—A Thomas splint with two arches for wire suspension attached. To the right is a standard pattern foot-piece fixed in position by strapping. To the left a specially made arch with holes and notches is screwed to side bars of splint.

Three types of rigid arch have been tried.

1. A strip of aluminium splinting is bent into suitable shape. A thin strip of metal is on each side passed through the notch opposite side bar of splint and is fixed to this by strapping. This is not sufficiently firm and soon allows some movement of the arch and so of the wire.

FIG. 3.—A septic comminuted fracture near middle of right femur. There was much sagging with backward and inward displacement of lower fragment. Wire suspension to each fragment, the lower being drawn forwards and outwards, the upper forwards and inwards. The ends of the loops project beyond the wound.

2. One of the standard pattern supports for the splint often employed as a foot-piece can be widened and altered so as to fit the splint at any point, and is then fixed by strapping. (Fig. 2.) These are perfectly firm, and answer very well, but as there are no holes or notches the wire is apt to slip unless the support is fitted exactly in the right place.

3. Special arches can be made so as to screw on to the side bars, and are provided with holes or notches through which the wire can be threaded. (Fig. 2.) Though most useful, these are not essential.

If it is thought desirable that one of the displaced fragments shall be pulled backwards (traction) the arch can be equally well fitted to pass behind the leg.

Method of Application.

The splint is first put into position, supports are arranged, and strong extension is obtained by a spring.

The limb is now held so that the foot shows a position of slight external rotation, and the lateral supports which control rotation are applied. Both the extension and lateral supports can be readjusted, if thought necessary, after the wire suspension has been carried out.

The wire employed is ordinary silver patella wire.

Where there is an oblique fracture, or where the comminution is not severe, the end of a suitable length of wire may be twisted to form a loop. The ends of the fragments are usually already denuded of soft parts, and can be felt by a finger in the wound. The wire loop is then introduced and with the help of the finger is insinuated round the free end of the displaced fragment. In the event of the free end of the fragment not being sufficiently exposed a periosteal elevator may be used to clear it for a short distance, but extensive baring is neither necessary nor desirable.

The displaced fragment is now pulled up into position, and when the finger shows this to be satisfactorily accomplished the wire is attached securely to the rigid arch which has been sterilised and fixed in the proper position. If the pull is made obliquely and if the wire is fastened in this direction there will be no danger of the loop slipping off—i.e., if a backwardly displaced lower fragment of a supracondyloid fracture is being treated the pull should not be straight forwards but also slightly in a downward direction towards the knee.

There is also, as a rule, some lateral displacement of the fragments, the upper being abducted and the lower adducted. This must also be taken into consideration when drawing the fragment into position and fixing the wire. Generally speaking, in fractures of lower and middle thirds of shaft of femur the attempt should be made to draw the lower fragment into line with the upper, and hence the single wire around the lower fragment will, as a rule, be sufficient.

In some cases of sagging, however, where the upper fragment is abducted and the lower adducted or the reverse excellent alignment may be obtained by two wire loops, one drawing the lower fragment forwards and outwards and the other the upper fragment forwards and inwards. (Fig. 3.) Backward traction of the upper fragment in fractures in this region is seldom required, and in a few cases in which I have employed it in this region the wire has soon been found to be unnecessary and has been removed.

It is surprising how often the wire can be introduced through a wound already present, this being, if called for, slightly enlarged in the required direction. If necessary a small fresh incision may be made for the passage of the loop or to allow the pull of the wire to act in the correct line.

If there is much comminution all completely detached fragments should be removed and the wire or wires should pass round the extremity of one or both main fragments, including, if possible, any large piece of bone which is not quite loose.

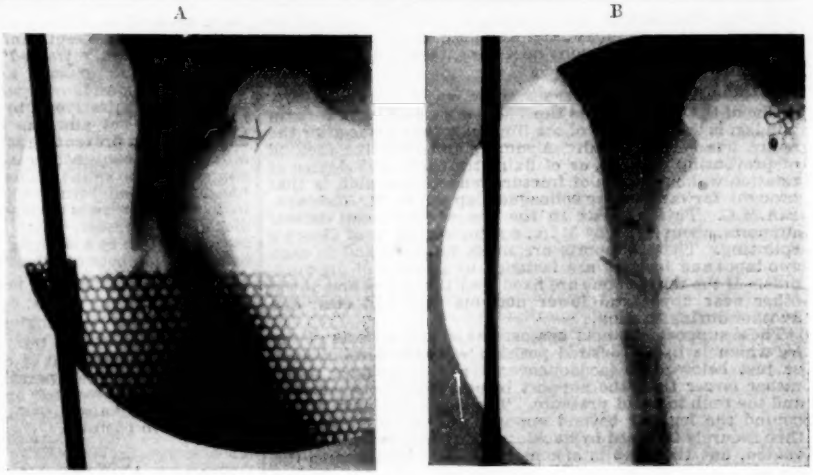

FIG. 4 (Case 3).—Fracture of right femur. A, Position when sepsis had subsided; B, after wire traction of upper fragment.

In some comminuted fractures it may be possible to pass a wire round all the fragments and cross the wire again in front so as to bind them together and at the same time to raise the bone to its correct position. (Fig. 5.)

In the case of fractures below the small trochanter the question will arise as to whether a loop should be used to draw the upper fragment backwards and inwards, or whether the lower fragment should be drawn forwards and outwards into line with the upper and smaller fragment. If the former procedure be adopted the wire will have to pass through the adductors and to be attached to a posterior arch or to a support attached to inner bar of splint. It is difficult to say which of the two methods is most desirable, and one would probably be guided by the position of the wounds, the amount of displacement, and which fragment was the more accessible. So far I have only treated two fractures in this situation by wire suspension, one by each method, and in each the result has been equally satisfactory. (Fig. 4.)

Efficient drainage having been secured attention is directed to the extension, and, if necessary, the spring and the lateral supports are readjusted. The supports beneath the thigh should also be tightened up so as to raise the soft parts and take some of the weight of the limb off the wire. It may here be pointed out that after sagging of the fragments has been corrected there may be a sagging of soft parts due to œdema and the dropping back of muscles and soft tissues which gives a very similar outline to the thigh, though an X ray examination may show a perfect alignment.

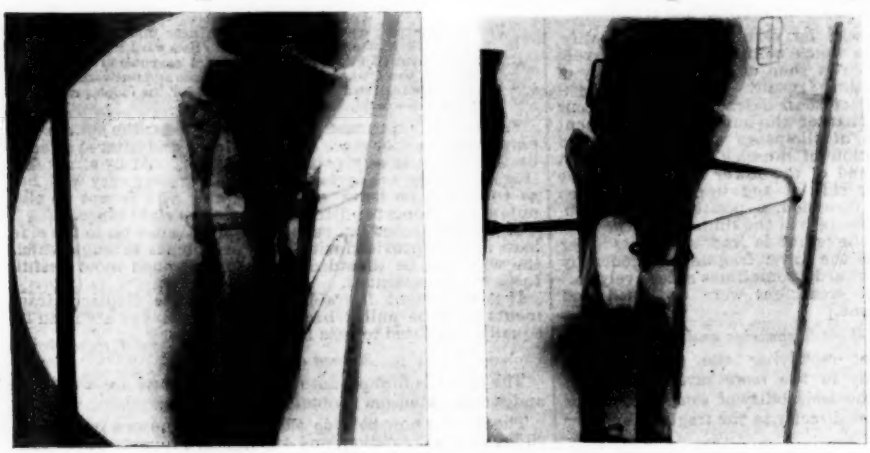

FIG. 5 (Case 5).—Fracture of right tibia and fibula. A, Before treatment; B, after wire suspension. The outline of the large wound can be seen.

Removal of Wire: Advantages of Method.

The presence of the wire causes no irritation or increase of sepsis.

Indeed, as a rule, the fixation of the limb in good position is attended with improvement in wound and in general condition of patient. There is no pain even when, as sometimes occurs, the wire cuts a little into the soft tissues. Needless to say, care must be taken that the wire does not press against nerve trunks or against large vessels, and in the lower part of the thigh the presence of supra-patellar pouch

of knee-joint must be remembered. Fortunately in this region the wire has to be usually brought out well to the side of the limb. After a week or ten days a further X ray examination should be made, and if necessary the wire can be readjusted.

The shortest time the wire has been left in position is two weeks, and in this case, where there was some cutting into the muscle and a little oozing of blood, there was no recurrence of the displacement. It is better to allow three or four weeks, or even longer, to elapse before removing the wire, as its presence causes no trouble; in one case it was left for eight weeks. The amount of bone lost and the radiographic evidence of union will guide one as to the advisability of removal. If the ends of the loop can be seen the wire may be cut and pulled out at an ordinary dressing, but if out of view in the deeper part of the wound nitrous oxide anæsthesia will be desirable.

Wire suspension can also be employed for suitable fractures of the tibia and fibula, especially where there is much comminution with large posterior wounds and sagging of the leg. It might also be of use in some fractures of the humerus.

Though in some cases wire suspension can be carried out with advantage as soon as the patients are admitted to a general hospital, as a rule it should be left until the acute infection has been overcome and the swelling has subsided—i.e., during the second stage of treatment and as early in this stage as possible.

I have recently employed the method in a very troublesome case of non-union of a fracture of the lower third of a shaft with backward rotation of the lower fragments five months after the injury, where several previous attempts by other methods had been made and failed, and after four weeks the fragments are still in good position.

The chief advantage of the method is its simplicity.

No special apparatus of any sort is required, for the ordinary foot-piece fixed over the splint is a perfectly efficient support. The actual operative interference, division of soft tissues, &c., is always slight and in many cases is literally nil. The kind of loop used and the arrangement of the wire will depend on the necessities of each individual case. The ordinary Thomas's splint is used and any method of dressing and treating the wound can be employed.

While fully admitting that there are other ways of effectively treating these displacements, I venture to bring this forward as a simple method which is of the greatest service in some very troublesome cases.

Illustrative Cases.

CASE 3 (Fig. 4).—Lance-Corporal G.P.K., aged 30, admitted Oct. 31st, 1917. Metal fragment removed before admission. Very septic wound, much swelling 5 inches long on outer side of right thigh in upper third. X ray showed oblique fracture sloping downwards and outwards from small trochanter for 3 inches.

Nov. 1st: Anæsthetic; wound opened up and spring extension applied. Pyrexia and sepsis persisted for a long time, though drainage appeared satisfactory. By end of December improvement had taken place in these respects, but the fracture was obviously in very bad position, upper fragment being very flexed and abducted, so that lower fragment could be felt passing upwards to inner side of, and behind, the upper. X ray examination showed these points clearly. (Fig. 4 A.) Fresh extension was applied and leg held in fully flexed and abducted position, but X ray examination showed only slight, if any, improvement.

Jan. 12th, 1918: Anæsthetic. Wire loop placed round free end of upper fragment. Counter incision made in adductor region and wire brought out through this and upper fragment pulled backwards and inwards into line with lower. Wire fastened to inner bar of Thomas's splint.

On Jan. 20th X ray examination showed perfect alignment. (Fig. 4 B.) Little pain and no increase of sepsis, but on 30th, as there had been a little oozing of blood from the inner wound the wire was removed. After this patient did well and an X ray on Feb. 20th showed that there was no recurrence of displacement.

Discharged to United Kingdom March 1st, wounds nearly healed, firm union, no obvious deformity. Shortening ½ inch.[2]

CASE 5 (Fig. 5).—Private A. P., aged 25, admitted Jan. 5th, 1918, with compound fracture of right tibia and fibula. Large wound on outer aspect of leg, 5 by 3½ inches, which had been freely excised at C.C.S., anterior tibial vessels having been ligatured. Wound very septic; severe comminuted fracture of tibia could be seen. The main lower fragment was displaced forwards 1½ inches in front of main upper fragment. In addition several large fragments not completely detached were projecting into wound at various angles. (Fig. 5A.)

Jan. 6th: Anæsthetic; leg put up on Thomas's splint with spring extension taken from plaster-of-Paris anklet. A wire was insinuated under fracture and ends crossed in front of tibia and each attached to arch. As wire was tightened the various fragments came together and the bone was reconstituted except for a piece which had been blown away or removed. (Fig. 5B.)

Though the position was, and continued to be, excellent, the septic process advanced and skin and soft tissues below wound became gangrenous, probably as result of ligature of anterior vessels. As there was considerable pyrexia with delirium and severe toxæmia the leg was amputated on Jan. 11th, but a stereoscopic X ray examination taken just before showed that position of fractured tibia was practically perfect, and that fibula had also come into position. The operative interference for introducing the wire was practically nil and was not the cause of the sepsis or the gangrene which occurred some distance away.

[2] All measurements are taken from anterior superior spine of ilium to tip of internal malleolus, tilting of pelvis being corrected, both legs being in same position of flexion, abduction, and rotation.

I have to thank my colleagues, Captain H. M. Anderson, R.A.M.C., and Lieutenant E. L. Councell, R.A.M.C., for their coöperation and help in treating these cases, and Captain M. H. Watney, R.A.M.C., for many radiographic examinations and photographs.

TREATMENT OF FRACTURE OF THE SHAFT OF THE HUMERUS BY SPLINTS.

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Need for Fixation to Chest Wall.

THERE is only one way in which a fracture of shaft of humerus can be absolutely fixed, and that is against the chest wall. I have for many years recognised this, and treated such cases by first fixing a splint to side of chest and then the arm on it, or fixing the arm on splints and then fixing these splints to side of chest.

Early in 1917 I treated a case of gunshot fracture of humerus; portion of shaft absent, leaving gap of 1 inch and flail-like arm. After wound had healed arm was so wasted, with ends of bones so prominent, that one quite easily detected any movement. By most careful fixation of limb on an internal angular splint, and of splint to chest wall by strapping, I could not control all antero-posterior and rotatory movements at seat of fracture—indeed, they were possible to quite a marked extent.

It seemed that only fixation by plaster-of-Paris to chest could absolutely fix fragments. I fixed internal angular splint to side of chest with plaster, and then arm and forearm to splint. This gave absolute fixation of fracture. Patient had musculo-spiral nerve paralysis, and it was important to leave extensor aspect of forearm free for massage and electrical treatment. This was easily done, because fixation simply of elbow and wrist on internal angular splint, fixed securely to side of chest, was quite sufficient absolutely to fix the fracture.

After treating the case in this way I was interested to find that Erichsen had held very strong views[1] as to the need for fixation to the chest wall. He recommended fixation by plaster-of-Paris bandages.

[The way in which the fractured ends are often displaced by the position in which the forearm is placed after splints are applied was described.]

Correct Angle for Forearm in Relation to Body.

When the arm lies at rest by the side the intero-anterior surface lies against chest wall—i.e., anterior aspect of elbow does not look directly forwards, but also inwards.

If elbow is flexed the forearm will project forwards at an angle of about 67° (or three-quarters of a right angle), with a plane representing anterior surface of body. Some surgical writers say it should be fixed at a right angle to such a plane, but this means slight rotation out of lower in comparison with upper fragment. If the flexed forearm is brought over front of chest in a sling, as is so often done, rotation *in* is quite marked and the elbow is brought forwards at same time, and upper end of lower fragment displaced backwards and outwards.

The difference between fixation of forearm at 90° and 67° with anterior plane of body is not very serious, but the latter is preferable. If an internal angular splint is used (and this certainly seems to give the best fixation in fracture of shaft of humerus, for it is essential to fix elbow), this angle can only be obtained by having forearm part of splint fixed at an angle of 22° to plane of arm part of splint; this will fix forearm at angle of 67° with anterior plane of body.

Advantages of a Posterior Splint.

If we use the combination of a posterior and an internal splint, fixed together and fixed by plaster to the chest, we provide a stable support for the arm when the patient is sitting up or lying down.

Anterior or outer splints can be added, if thought necessary, and fixed by webbing straps or strips of strapping. The posterior and internal splints should be joined by quite small nails or by quite narrow strips of thin metal, so that no metal lies behind fracture to obscure skiagram. In certain cases hinges might be used, but to unfix a splint for a dressing is never satisfactory.

But if posterior splint is not fixed to internal one in construction of splint it must be fixed to it by firm strapping carried round internal splint on which arm rests, through triangle, and not round patient's body. But it is a decided advantage to have it fixed in construction of splint, especially when we have to place fractured arm on splint in recumbent position (as under an anæsthetic).

I do not think it is needful to carry the posterior splint higher than it is possible to do the internal one, so as to support the upper fragment behind.

[1] Erichsen's Surgery, 1895 edition, p. 590.

The construction of the splint allows a lateral skiagram to be taken. (Fig 1.)

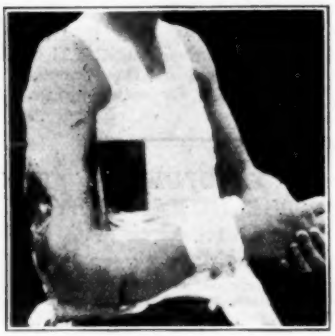

FIG. 1 shows splint fixed to chest wall with plaster bandages. The wrist is fixed to splint with piece of strapping. A skiagraphic plate has been inserted through the triangle to show how a lateral skiagram can be taken with the arm securely fixed to the chest wall. A large gunshot wound on outer aspect of arm is shown. The splint is my original one without a posterior part.

Other Details in Construction of Splint.

The base of triangle should be 4 inches, so as to give a sufficiently large angle at upper end, and this angle must not be filled in. The two pieces of wood which form sides of splint must be so bevelled that junction at upper angle is an angle and not a flat surface, for if it were the fragment might be displaced outwards by thickness of splint at upper angle. (Figs. 2-4.)

The average length of part of splint on which arm rests (outer side of triangle) should be 10 inches (about average length of arm from anterior axillary fold to lower border of bent elbow). In a very short man it was 9 inches, and in a man 6 feet 1 inch it was 11 inches.

If possible it would be best to take exact measurement for construction of splint, but a 10-inch splint would be right for most cases, and if not it would only necessitate fixing forearm either slightly over or under edge of forearm part of splint, and even in a 9-inch arm would adequately support elbow.

But if splint is not made from measurement the forearm part need not be fixed to arm part until it is used. It can then easily be screwed on to it, and will do for either right or left forearm. The triangular part of splint can then be made of full length—11 inches—and forearm part can be screwed on at any level.

Question of Abduction of Arm.

There is no objection to placing the limb in the abducted position if both fragments are equally abducted.

Indeed, in fracture below insertion of deltoid it is a distinct advantage, for the upper fragment is abducted by that muscle.

Some surgeons recommend abduction for treatment of fractures of surgical neck. Even granting that upper fragment may be a little abducted by supraspinatus, it certainly cannot be much, and if we markedly abduct the lower fragment when there is no abduction or only very slight abduction of the upper we shall get angulation at seat of fracture.

It therefore seems to me a great mistake to put up a fracture high up in shaft of humerus (i.e., a fracture higher than an inch below surgical neck) in such extreme abduction as a right angle with the body.

Treatment of Fractures Very High Up in Shaft of Humerus.

We cannot control position of upper fragment of a fractured humerus by a splint, unless it is more than one inch below surgical neck. In such cases the triangular splint cannot be used, for it would abduct lower fragment and could not abduct upper. I think it should be a rule in treating fractures of humerus not to abduct lower fragment unless you abduct upper fragment also, or a skiagram shows that it is abducted. In these cases, of course, no plate can be placed high enough to obtain a lateral skiagram, unless just for a very brief period it pushes up anterior axillary fold.

If the fracture is at this high level we must be content to fix arm in intero-posterior splint with forearm projection, fixed by plaster bandages against chest wall, but the splint must be made of quite thin wood and upper end must be carefully bevelled, so as not to push out lower fragment into abduction, particularly at upper edge, or to abduct upper by pressure of edge against lower end if it reaches high enough to lie just inside lower extremity.

If we have a posterior splint fixed to an internal one, as I think we should, we cannot carry our turns of plaster bandage around internal splint and chest wall unless we have posterior splint interrupted. It will be enough to have two gaps in it, to carry plaster bandages through, to allow of firm fixation to chest wall. In the triangular splint plaster bandages pass through triangle.

In these high fractures without wounds it might be enough to fix arm to side of chest with plaster bandages, but I think a splint is more satisfactory. To simply fix arm against side of chest with strapping or bandages seems quite unsatisfactory.

Extension can easily be applied by carrying side of triangle on which arm rests, or internal splint if no triangle is used, a few inches beyond fracture with forearm projection, and fixing a small piece of wood or metal at right angle to end, and attaching to this a rubber accumulator or spring.

[The treatment of gunshot and other compound fractures of the shaft of the humerus and the modifications in the form of splint required by them were here dealt with.]

Method of Applying the Splint.

The splint is best applied with patient standing, or sitting on stool; he should hold his body as erect as possible and keep shoulders level. I think it would be very difficult to apply plaster bandages in recumbent position. But if any operation on the arm is required when fixed on splint it is not necessary to remove plaster fixation of splint to chest, as it does not fit tightly, but it would be well to cut it through in front with plaster cutters and then put a bandage around it in case of any need for artificial respiration. The plaster case can be made perfect again the next day by a few plaster bandages. If it is necessary to give an anæsthetic to fix the fracture for the first time on the splint, the best plan is to temporarily fix the splint to the chest wall with a binder over it. The whole chest must, of course, be covered with flannel bandages, or a thick vest put on before the splint is fixed to it with the binder.

During the time the splint is being fixed to chest wall with plaster bandages the fractured arm must be very carefully supported on an internal angular splint in abducted position by a nurse or orderly, who give their whole attention to this. And before fractured arm is raised into abducted position the exact level to which upper edge of splint is to come should be marked on chest wall.

The splint is padded on both sides. Several folds of lint (boracic lint is best) are quite enough, and no great thickness must be used between chest wall and splint, nor is this necessary on arm aspect of splint. Upper angle of splint must not be thickly covered.

In applying plaster bandages it is well to take a few turns under splint—i.e., under base of triangle, and over opposite shoulder protected with a thick pad of lint, to hold up splint well. As soon as plaster bandages have set enough to fix splint to chest wall the fractured arm is placed in good position. All that need be done in way of permanent fixation is to secure forearm on forearm splint with pieces of spool strapping around forearm just above wrist and the splint; this fixes elbow and with it lower fragment.[2] The forearm is placed on supine in semi-pronation and need not be covered on extensor aspect (except for one inch above wrist by strapping), so that it is available for massage and electrical treatment in lesions of musculo-spiral nerve. If there is a lesion of this nerve forearm part of splint should extend beyond wrist to allow of hyperextension of that joint; but if no lesion of musculo-spiral nerve it should not be long enough to interfere with wrist movements.

The internal and posterior splints will prevent any angulation at seat of fracture in these directions, and if there is a tendency to it in anterior or outward direction extra splints can be added on either aspect and fixed by webbing straps or strips of spool strapping passed through angle. If triangular splint is not used but the straight one, it is well to place the webbing straps between splint and chest wall before fixing with plaster bandages, so that they may be available for extra splints if required.

If desirable the elbow can also be fixed by a narrow piece of strapping carried obliquely over it and under lower end of internal splint, through triangle, or round arm aspect of upper end of forearm splint where it joins arm portion, if a splint without triangle is used, but this fixation of the elbow is not essential. It is desirable to support forearm portion of splint until plaster has quite set, so that weight of forearm does not drag splint out of position.

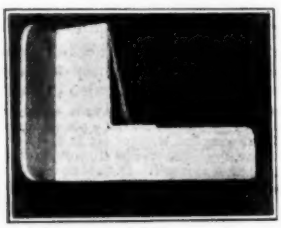

FIG. 2.—The splint I now use. On the left is seen posterior portion attached at right angle to internal portion, which forms one side of triangle, and on this the arm rests. Another side of the triangle—that attached to side of chest—is just seen behind it. The forearm part of splint is seen projecting to the right, from the internal part.

FIG. 3.—The splint, showing the triangle, and a back view of posterior part of splint, which hides internal part on which arm rests. The straight side of the triangle, which is seen in the figure, is fixed to the chest wall.

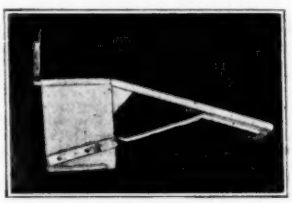

FIG. 4.—The splint viewed from its under aspect to show angle (22°) at which forearm piece is attached to internal piece. The part of the splint to which the metal bar supporting forearm piece is attached is the base of the triangle. This metal bar is not essential. On top of the splint is seen lower edge of posterior piece of splint.

[2] This is all that is absolutely necessary, but I generally put strapping or bandage around the arm as well.

Other Forms of Splint which are Fixed to Chest Wall.

I wrote the first part of this paper in the early part of 1917, but did not complete it until I had had further experience in the treatment of these fractures of the shaft of the humerus.

In the meantime I know that three papers have been published (and probably several more have been which I have not seen) in which splints are described which are fixed to the chest wall.[3]

Captain Wilson advocates fixation of splint to chest wall by plaster bandages, but I should prefer my own splint. I think the arm would be more securely fixed on it than on a rod-and-sling splint, and I do not consider the arm should be brought across the chest.

I should have the same objection to Mr. Pringle's splint—i.e., that the lower fragment is rotated in or out by position in which forearm is placed, and I also see no reason why abduction should be carried to such an extreme as to make it very awkward for the patient to get about when able to do so.

The wire frame method of fixation to the chest wall advocated by Captains Johnston and Buchanan does not seem to me nearly as secure a method of fixation as plaster bandages.

[3] Hogarth Pringle (Glasgow), British Journal of Surgery, July, 1917; Captain G. E. Wilson, THE LANCET, 1917, i., 953; Captain W. H. Johnston and Captain J. S. Buchanan, THE LANCET, 1918, i., 133.

Medical Societies.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

The Cavendish Lecture on the Future of the Medical Profession.

A MEETING of this society was held at the rooms of the Royal Society of Medicine on July 11th, Dr. A. J. RICE-OXLEY, the President, being in the chair, when Major-General Sir BERTRAND DAWSON delivered the second part of the Cavendish Lecture (see p. 83). In the discussion which followed,

Major HENRY DUTCH drew attention to the difficulties of accommodation in the case of hospital clinics. In a suburb of, say, 80,000 there would be about 40 doctors. Each would need his own consulting-room and his own waiting-room. A union of medical men was required, ready to uphold each other and stick together.

Major Sir JOHN BROADBENT said that the greatest drawback to the out-patient centre was that every doctor in the district could not be put on, and those who were not would feel themselves severely ill-treated. All classes of patients would not attend the centre at a fixed time as this would mean a mixed crowd of poor and rich. It was necessary to know the home life of the patients in order properly to deal with diseases, and besides a certain number must be attended to at home. He thought the better plan would be to establish centres in different parts of London, to which specialists (including radiographers, pathologists, &c.) should be attached, and to which the general practitioners could bring their patients and have advice free. At present it was difficult to get such help. Poor people should be attended at the expense of the State, but those attending them should have adequate remuneration. The hardest case was that of the middle class. Attached to the voluntary hospitals there should be paying wards admitting patients according to their means. He disapproved of putting the hospitals under the State or University.

Dr. E. H. M. STANCOMB (Southampton) said that the general practitioner should be educated thoroughly in public health, housing, and town-planning. He should have a full knowledge of local hygiene, especially that of his own town.

Captain W. F. H. COKE asked if the whole population were to come into the scheme. He thought the practice of the country doctor must be essentially as it was to-day, but he should have the assistance of a special opinion when needed.

Major GORDON DILL said that the only people who could reap benefit from our present system of treatment were the very poor and the rich, the latter at great trouble and expense. The resources of medicine should be free to all. The period of gradual change had become a revolution owing to (1) the Insurance Act and (2) the war.

Captain A. E. RUSSELL said the first thing to decide was whether the principle of the scheme was accepted—whether the profession was satisfied with some form of State control. What means were available to bring evidence to show that the profession supported it?

Dr. G. E. HASLIP said that we must look at the matter from the point of view of the health of the nation and make the people of the country healthy, which the present system did not do. Prevention was not considered enough by the profession. The country was governed by permanent officials and not by Parliament. The Ministry of Health Bill was blocked and Parliament was helpless.

Sir ROBERT MORANT said that medical men must take more part in public affairs. At present the Maternity and Child Welfare Bill was being passed through Parliament without any organised assistance or advice from the profession as to how the problem should be handled. The medical profession had no right to say that things were thrust upon them from above when they did not think things out for themselves. It was impossible to get matters properly voiced by the profession. They should get to work to decide as to the particular characteristics the scheme should possess.

Mr. F. G. LLOYD also spoke, drawing attention to the various forms of State service already in existence, such as the Royal Army Medical Corps, the Royal Navy Medical Service, the Indian and Colonial Medical Services, and Sir BERTRAND DAWSON briefly replied.

Reviews and Notices of Books.

MILITARY MEDICAL MANUALS.

I. *Fractures of the Orbit and Injuries to the Eye in War.* By FELIX LAGRANGE, Professor in the Medical School of Bordeaux. Translated by HERBERT CHILD, Captain, R.A.M.C. (T.). Edited by J. HERBERT PARSONS, Captain, R.A.M.C. With 77 illustrations and 6 plates. 1918. Pp. 248. Price 6*s.* net.

II. *Artificial Limbs.* By A. BROCA, Professor of Topographical Anatomy to the Faculty of Paris, and Dr. DUCROQUET, Orthopædic Surgeon to the Rothschild Hospital. Translated and edited by R. C. ELMSLIE, M.S., F.R.C.S., Major, R.A.M.C. (T.F.), Orthopædic Surgeon to St. Bartholomew's Hospital, Surgeon to Queen Mary's Hospital, Roehampton. With 208 illustrations. 1918. Pp. 160. Price 6*s.* net.

London: University of London Press, Ltd.
Paris: Masson et Cie.

I. THIS volume is based on Professor Lagrange's experience of over 2500 wounds involving the eyeball inflicted in the present war, including 609 cases of fracture of the orbit. From this material a selection of case-histories is given and analysed in such a way as to make the work one of value, not only from the standpoint of general as well as ophthalmic surgery. The following examples of original deductions drawn by the author will serve to give an idea of the scope of his work.

Indirect fractures extending from the vault of the cranium to the sphenoidal fissure and involving the orbit should, according to the classic authorities, form a prominent feature in the practice of war surgery, but as a matter of fact these cases are exceedingly rare. In only two out of 609 cases was a fracture of the orbit so caused.

When a projectile passes above the orbit, implicating the frontal bone and the anterior cerebral region, it produces fractures of the orbital vault affecting the sensory, motor, and optic nerves in the region of the optic foramen and the sphenoidal fissure. The eyeball is not involved. ..... When the projectile passes below the eyeball without traversing the orbit and without fracturing it, it produces concussion affecting the eye in the macular region. This is the great cause of diminution or loss of acuity of central vision.

The author's explanation of the frequency of macular lesions in these cases is interesting. The violent air-vibrations caused by the projectile are propagated, he points out, to the orbital contents by way of the pterygo-maxillary fossa and spheno-maxillary fissure; the wave of oscillation tends to toss the eye forwards while the optic nerve holds it back. In this disturbance the fragile macular region at the posterior pole is the most apt to suffer.

Some new light is thrown on what has always been a somewhat obscure subject—viz., hæmorrhage into the sheath of the optic nerve. In no single case in which this condition was presumably present did Professor Lagrange find the ophthalmoscopic picture of retinal ischæmia, and he is therefore inclined to agree with Gonin and Dupuy-Dutemps, who reject this as one of the causes of that condition. Another

observation worthy of note concerns what the author terms traumatic proliferating choroido-retinitis, a condition resulting from hæmorrhage after laceration of the retina and choroid, to be distinguished from ordinary retinitis proliferans, in which the origin of the blood clot is spontaneous hæmorrhage into the vitreous without the implication of the choroid at all.

Among other subjects on which this book throws light we may mention traumatic detachment of the retina (four cases are given where detachment was due to concussion without direct injury to the globe) and traumatic enophthalmos. With regard to the treatment of these serious cases there is not so much said that is new. Professor Lagrange's experience of the rarity of sympathetic ophthalmia agrees with that of all others who have written on the subject during the present war. At the same time he insists that it would be a fatal mistake to ignore the danger, and, while giving rules on the subject similar to those generally taught, lays especial stress on the importance of the earliest stage of the infection. "We say without hesitation," he writes, "that photophobia, lacrymation, fatigue in reading and diminution of visual acuity are the first degree of the affection of which serous iritis is the second degree, and of which iridocyclitis is the third." A chapter on reparative surgery of orbital fractures gives some interesting hints about that difficult subject, restoration of the eyelids, especially about the employment of adipose and cartilaginous grafts, though the size of the book does not allow of these matters being very fully dealt with. We commend the book as concise, interesting, and original. It is very well translated.

II. To assist the surgeon to devise the most suitable apparatus for the individual case of the maimed man who has to be provided with an artificial limb this little book by Professor Broca and Dr. Ducroquet is admirably adapted. The methods used in France are in many respects different from those employed in this country, and the surgeon will find here a greater choice of the most suitable apparatus.

Blood Pictures. By CECIL PRICE-JONES, M.B. Lond. Bristol: John Wright and Sons, Ltd. 1917. Pp. 91. Price 6*s.* 6*d.* net.

THIS little book was written, so the author tells us in his preface, in response to the frequent request by clinicians for some guide to the interpretation of reports on blood examinations, and also for some simple method by which general practitioners can assist diagnosis by making blood examinations. Many general practitioners will welcome this practical answer to the request. The study of the cellular elements of the human blood under conditions of health and disease has received the attention of the best brains amongst medical scientific men in every civilised country of the world during the past 20 years or more. The existing literature on the subject is immense and in its manifold difficulties and complexities the subject is one which may well occupy the whole attention of an expert worker for a life-time. For this very reason, and for the fact that quite definite assistance may be derived from total and differential examinations of the blood cells in many cases, it is opportune that such a guide as the one under review should have come into being. With its aid the general practitioner should be able to appreciate the value of cellular hæmatology in the differential diagnosis of human diseases, especially as the author has not unduly emphasised the reliance which may rightly be placed on laboratory examinations by those in need of general guidance. After defining the normal red and white cells, their types and total and relative numbers in the human blood, the author proceeds to a description of the blood pictures found in bacterial, protozoal, "blood," and malignant diseases. In each case he gives examples of actual cases occurring in his own experience, which serve as illustrative types of the particular picture. The book is well arranged, is agreeably dogmatic, and presents the subject in lucid form. We cordially recommend it to those for whom it was written.

Three Clinical Studies in Tuberculous Predisposition. By W. C. RIVERS, M.R.C.S., D.P.H., Tuberculosis Officer, Barnsley District, West Riding, Yorks. London: George Allen and Unwin, Ltd. 1917. Pp. 272. Price 12*s.* 6*d.* net.

TUBERCULOSIS is a medico-sociological problem the intricacies of which seem to increase in complexity as investigations become more penetrating. There is much still to be learnt regarding the nature, varieties, and conditions of the growth of the tuberculous seed, but in regard to the tuberculous soil we are still merely scraping the surface of things. Dr. Rivers has accomplished a valuable purpose in gathering together into one volume the results of his personal observations and researches regarding certain physical conditions which can be conveniently viewed as predisposing to tuberculous infection or influential in the spread of tuberculous lesions. The first part deals with the supposed relationship between consumption and ichthyosis. The author's conclusion is thus rather curiously summarised:—

"In all three ways, then—from a penetrable skin, especially from diverse internal anomalies, possibly sometimes from naturally feeble constitution—if not in others as well (for the "efficient cause" oftener comprises a plexus of antecedents than it presents only one), existence of ichthyosis may entail liability to consumption. There is thus something of an *a priori* case, which, added to the direct clinical evidence given first, establishes to one judgment at least ichthyosis as a sign of predisposition to consumption."

Part II. provides records of cases and references to literature seeking to establish an association between consumption and squint. Part III. is an elaborate monograph on the connexion between consumption and non-tuberculous nasal abnormality. Here are collected records of a large number of cases with illustrations and a valuable bibliography in the form of footnotes. Although the author's thesis can scarcely be considered established, his material has been skilfully brought together and effectively presented. In Part IV., which is designated "Conclusions: An Examination of Lunatics—Protocol," the author elaborates his main conclusion: "Back to diathesis!" The volume closes with a tabular summary of 500 cases investigated by the author. The volume is a record of much painstaking research and merits consideration as a serious attempt to penetrate into the perplexities of some of those states and conditions which we collectively designate "predisposition." The numerous illustrations add much to the interest of the study.

Burns and Their Treatment. By J. M. H. MACLEOD, M.A., M.D. Aberd., F.R.C.P. Lond., Physician for Diseases of the Skin, Charing Cross Hospital, Royal Flying Corps Hospitals, &c. London: Henry Frowde and Hodder and Stoughton. 1918. Price 6*s.* net.

THE author of this excellent little book states that the manuscript was written originally in order to extend his own knowledge of the treatment of burns, of which severe and extensive examples came under his care in the hospitals of the R.F.C., and elsewhere. To a careful summary of the work of others in regard to burns and their treatment, there is added the author's own ripe experience, and the happy result is a practical text-book; every practitioner who reads it will keep it for reference. The serious disadvantages of the older methods of treating burns by occlusive and greasy applications are pointed out, and the more modern methods are described. The "open method," that of healing under a natural scab while continuously exposed to the air, is regarded as the simplest and in many ways the best for extensive burns, and it has the great advantage that it does not necessitate the terrible ordeal of periodical redressings. Methods of healing under an artificial scab, and especially the paraffin method, have been extensively employed during the present war, and it is gratifying to learn that grafting for large unhealed surfaces is largely avoided under the newer methods of treatment. Applications of X rays or radium have been found of value in reducing unsightly hypertrophic scars, but fibrolysin injections have proved disappointing. The book deals also with other forms of burns than those due to intense heat—namely, with electricity burns, burns from lightning, X ray and radium burns, burns from corrosives, and with sunburn. There is a useful and interesting chapter on dermatitis from high explosives. The value of the work is enhanced by illustrations of different types of burns and of apparatus for methods of treatment, by well-selected references, and by a full index.

The Panel Doctor: His Duties and Perplexities. By T. M. TIBBETTS, M.D., D.P.H. Second edition. London: John Bale, Sons and Danielsson. 1918. Pp. 75. 2*s.* 6*d.*

AS we remarked at the time of its first appearance, Dr. Tibbetts's sketch portrait of National Insurance in the working supplied a want which many must have felt, and the first edition of the book was therefore rapidly exhausted. The author has now brought its subject-matter up to date, while the legal points have been re-examined and corrected.

THE LANCET.

LONDON: SATURDAY, JULY 20, 1918.

The Future of the Medical Profession.

THERE appears to be no doubt in the public as well as in the professional mind that now is the appointed time for placing the medical profession on a more stable basis, both as a calling for its members and as a service whereby the health of the people is to be maintained by the best preventive and curative measures. By Parliament we are promised a Ministry of Health, which will, at any rate, centralise official activities as far as State medicine is concerned, and which, if it is to play a live part in the scientific developments of the future, must break down all such barriers as are unnecessary or artificial between State medicine and the domiciliary care of the people. In many directions groups of medical men are preparing collective opinions to guide the Government in respect of the enormously valuable departure which is contemplated, and simultaneously the lay papers, interpreting, we may be quite certain, the wishes of their readers, are devoting space and thought to the practical ways in which the medical profession can be organised for the public good. It is being allowed that, as medical men will, under every scheme for the promotion and preservation of national health, be the administrative officers, there is sense in allotting fair treatment to them. Thus it would seem that if the Government in their projected legislation give expression to this view everyone will be pleased.

We publish this week three papers dealing with the future of the medical profession, which cover much common ground, even while they are inspired by different ideals and lay stress in marked manner upon different social, professional, and medical problems which call for early solution. Sir BERTRAND DAWSON'S Cavendish Lecture, delivered in two instalments before the West London Medico-Chirurgical Society, will be seen by our full abstract to contain a comprehensive and idealistic scheme for rendering the medical profession of greater value to the State, while demanding of the State more substantial recognition for doctors in their education and their calling than is now granted. The main novelty in Sir BERTRAND DAWSON'S scheme is the suggestion for the endowment of buildings and structures for medical purposes by the State. For an adequate medical service, efficiently staffed, he insists that there should be in each locality adequate buildings and equipment for diagnosis and treatment, and it is, he holds, in the housing of health services generally that grants from the State are most needed. The allocation and distribution of such grants must obviously be controlled by a powerful central body, and Sir BERTRAND DAWSON is in agreement with most thoughtful reformers in believing that the new Ministry of Health will at the beginning be associated in its work with the Local Government Board, as well as with the National Insurance Commission. In no other way could its early activities be developed, and its later utilities depend upon the direction of its start. The picture of an organised medical profession, grouped around local hospitals and clinics, and being at the same time in close relation with the central hospitals placed in the larger centres of the population, is a fascinating one. No doubt in this way the intellectual life of the medical profession would be acutely developed, and as a result preventive medicine and early treatment would work wonderful transformations in the national rates of sickness and incapacity. But these happy things will only come to pass if the medical profession will acquire more influence than it now possesses in the conduct of public affairs.

Professor BENJAMIN MOORE and Mr. C. A. PARKER, as officers of the State Medical Service Association, re-state in full the case for a State Medical Service, pointing out that both lay and medical publics are realising the meaning of the formation of a Ministry of Health. All can see that changes in the relation of doctors to the public must follow on the erection of the new bureau, and that some form of organised medical service will result. The essay by Professor MOORE and Mr. PARKER should be read, because it summarises briefly but fairly the collective views of various bodies, and thus presents in a definite form the headings at least of the questions which require to be settled if the new Ministry of Health is to work from the beginning in close coöperation between preventive and curative medicine, and unhampered by the legitimate resentment of medical men. The advocates of a State Medical Service belong to the "extreme left party," to quote Dr. LAURISTON E. SHAW'S phrase in the opening sentences of his essay on the relations which should prevail between the medical profession and the public; this is the party which sees salvation in the proposal that every medical man to whom the State has granted medical registration shall become the servant of the State. Dr. LAURISTON SHAW does not follow this path, though he is equally opposed to those who think that the medical profession can still prosper, independent of Government control, but deprived also of all the facilities for development which State assistance connotes. Dr. LAURISTON SHAW enjoys the independence of individuality in expressing his thoughts, and in an interesting paper gives a classification of professional functions which will form a useful basis of thought at the present moment. And we cannot too often repeat how necessary it is that medical men should take heed of what may be in store for their calling when the Ministry of Health comes. It is perfectly true that many questions of organisation cannot be discussed until the Ministry has been formed, but it is equally true that the medical profession can play an important part in the new departure from the beginning if they can formulate some general views and expand them on public grounds. If we are at the outset hopelessly divided the Bill in its final stages may bring us sad things—even a humiliating and mischievous dependence.

Annotations.

"Ne quid nimis."

BRITISH AID TO FRENCH WOUNDED

France's Day was celebrated in England last week, and in order to give the public an adequate idea of the extent to which Britain has already come to the aid of French wounded and victims of the war, the British Committee of the French Red Cross issued on the day an excellent compilation from the pen of Mr. Laurence Binyon, entitled "For Dauntless France" (Hodder and Stoughton. Price 10*s.* 6*d.*). The book is not a record of Red Cross work alone, but includes the activities of the English canteens and of the various enterprises undertaken in relief of the devastated regions and the refugees. The British units have received financial support from the French Government as well as the coöperation of many subjects of Allied and neutral countries not included in the scope of the present book, and it should not be forgotten that there is also a French War Emergency Fund in this country which helps to maintain the military hospitals under the Service de Santé. Mr. Binyon opens with a section entitled "The Call and the Answer," in which he surveys the scene in Western Europe from an imagined aerial vantage-point, and describes the working of hospitals and relief agencies as a whole. The first part of the book also includes an account of a sample day's work at the office of the Comité Britannique, which now employs more than 2000 people, and of the early and very valuable work of the French Flag Nursing Corps in placing English nurses at the disposal of the authorities at the very outbreak of the war. These 40 pages should be read by everyone who wishes to understand how slight a barrier *la Manche* has been between English and French coöperation in the work of healing and restoration. The second part of the book is an orderly record of the work, illumined in the third part by the compiler's vivid impressions of it as an eye-witness. A complete alphabetical list of workers is given in Part IV. A frontispiece in colour by Edmund Dulac embodies the dauntlessness which is the keynote of the book, and five other illustrations help the reader who has not crossed the Channel to picture the scenes described. M. Paul Cambon in his preface says that "tout ce que l'auteur a vu et recueilli tend à resserrer entre les deux peuples non seulement la confiance et le respect, mais, mieux que cela, le lien émouvant de la véritable amitié."

ŒDEMA OF THE GLOTTIS IN RHEUMATIC FEVER.

IN the *Journal of the Canadian Medical Association* Dr. L. M. Lindsay has reported a case of rheumatic fever with a very rare complication—œdema of the glottis.

A girl, aged 11 years, was admitted into the Children's Memorial Hospital, Montreal. Three days previously she had been taken ill with what appeared to be an ordinary attack of rheumatic fever, and 4-grain doses of sodium salicylate were given every four hours. On admission she was rather thin and pale. The most striking feature was swelling of the left side of the face and neck which pitted on pressure, and prevented her from closing or opening the eye. Scattered over the body were ecchymoses varying in size from a 5-cent piece to the palm of the hand, deep red, mottled, and sharply circumscribed. The left shoulder and the right knee and elbow were painful, tender, and swollen. The heart was somewhat enlarged, and there was a rough systolic apical murmur, transmitted round the axilla to the back. The tonsils were rather large and the pharynx was congested. The urine was normal. Five grains of sodium salicylate were given every four hours. On the following day she suddenly began to gasp for breath, and in a few minutes her condition became desperate. She was unable to draw her breath and was becoming cyanosed. Tracheotomy was at once performed and gave immediate relief. The œdema gradually diminished, although subcutaneous hæmorrhages continued to appear in crops, chiefly on the legs and thighs. They were much smaller than the original ones. After a week she was greatly improved and the tracheotomy-tube was removed. The temperature, which had usually been over 101° F., was now below 100°. Recovery was slow but steady. Cardiac hypertrophy and mitral insufficiency remained.

The question may be raised whether the purpura and œdema were not due to an idiosyncrasy to sodium salicylate, as this drug is known to produce purpura. Against this view is the fact that when the girl attended as an out-patient with vague pains and slight fever she was given 20 grains daily of aceto-salicylic acid for one week without causing purpura.

THE TREATMENT OF FUNCTIONAL NERVOUS DISORDERS IN THE ARMY.

"H. H." writes:—

"Within the next few months a considerable number of members of the medical profession will be called up to serve with the R.A.M.C. Some will be men of experience attached to the consulting staffs of hospitals in London or the provinces, and many will be anxious, if possible, to do work that has some bearing on the less mechanical aspects of medicine.

Now the present war has revealed a vast field for useful work in the treatment of those functional neuroses usually classed together under the heading of 'Shell shock.' The War Office has initiated a system for dealing with such patients in special hospitals, under the care of officers specially selected for the purpose. Opportunities for instruction in this branch of medicine are given to those who, like the majority of the profession, are unfamiliar with the treatment of the neuroses."

As a certain number of medical men who are interested in, or have had previous experience in, this work may be required, they should send in their names to the War Office, as soon as they are called up, stating their wish to undergo a course of training in this branch of medicine. In this way the treatment of functional nervous disorders in the army should fall into the hands of those competent to give it, and to give it with the necessary sympathy and enthusiasm.

REGISTRATION OF NURSES.

A FORTNIGHT ago we commented on two meetings at which the State registration of the nurse was the central theme, and expressed our confidence in the ability of nurses to settle their own polity in regard to it. In a detailed letter which she has addressed to us Mrs. Bedford Fenwick, who occupied the chair at one of these meetings, while expressing her appreciation of some of our conclusions, desires us to state that the amendment to which we alluded was not accepted by herself as chairman, as it was proposed by a person who was not a member of the society, and was therefore not in order. We accept the statement, adding a regret that no orderly means could have been found for holding out an olive branch. Mrs. Fenwick reproaches us for our unfairness in not allowing her to reply at length. We should have been glad to do so if space had permitted, but as it does not we must refer our readers, who desire further to pursue the controversy, to the *British Journal of Nursing*, where Mrs. Fenwick informs us that she will publish her reply in full.

THE FUTURE OF THE MEDICAL PROFESSION.

(Being an abstract of the Cavendish Lecture delivered before the West London Medico-Chirurgical Society on July 4th at the West London Hospital and July 11th at the Royal Society of Medicine.)

BY MAJOR-GENERAL SIR BERTRAND DAWSON, G.C.V.O.,
PHYSICIAN TO THE LONDON HOSPITAL.

I.—AN EFFICIENT MEDICAL SERVICE.

THE lecturer attributed the changes which are now impending to a growing appreciation of the fact that much disease is preventable, a growing sense that health is of supreme interest alike to the State and the individual, and that the best means for preserving health and curing disease should be available for every citizen by right and not by favour. He pointed out that the growth of knowledge made measures for prevention and cure of disease more complex, so that they were no longer within the power of individual effort. If organised measures were to be put within the reach of all it followed that an efficient medical service could not be self-supporting. Its provision implied not only men, but equipment, and both must be distributed according to the needs of the community. He drew a parallel between provision for education and for health. Education was at one time patchy, unorganised, and dependent on voluntary effort. Since 1870, when Parliament stepped in, the State service had gradually overgrown the voluntary system, because it was recognised that education should be available for all; that the State was responsible for this matter, and that the cost was too great to be borne by fees or by voluntary effort alone. Health organisation had followed a similar development, though tardily, and at a distance; yet health was a more fundamental need than education. The lecturer thus reached the conclusion that the medical services must have some kind of State aid and central control, and that for their efficiency coördinated effort or team work in specially equipped institutions for diagnosis and treatment was needed. He contended, further, that curative and preventive medicine could no longer be separated in accordance with any sound principle, and should be brought together in thought, teaching, and organisation.

Insufficiency of Present Organisation.

These propositions were neither revolutionary nor new, and the direction of recent progress had conformed to them; what was needed was their wider recognition and systematic application. Taking as concrete instances the history of the diagnosis and treatment of phthisis and venereal disease, he showed how team work had gradually displaced individual effort; and the same was true of heart affections and gastro-intestinal maladies. But the need for such advantages had far outstripped the provision. For the masses the few voluntary hospitals were wholly inadequate; the middle classes of moderate means fared worse; and even the rich suffered because the investigations were not carried out in a clinic, where results could be placed side by side and a collective judgment given. A recent and striking example of organised team work was afforded by the orthopædic centres set up by the Army Medical Service under the inspiring leadership of Sir Robert Jones.

Looking to the future it was certain that investigations would become more and more technical and collective, and treatment would become increasingly specialised, with the result that the home would become less and less suitable for the sick. The insufficiency of the present organisation denied to the general practitioner the opportunities he should have for doing the best work. Hence he was apt to get disheartened and to deteriorate, as would a workman without the best tools or an adequate workshop. Team work and organised equipment should be available to provide him with the means to help himself, for the general practitioner was a central pillar of any scheme of reconstruction. In order to attract the best type of brain and character to the profession of medicine opportunities must be provided for doing good work; for observation, self-improvement, and research; for adequate repose and adequate remuneration.

The general practitioner—taking the wider outlook—should concern himself with the maintenance of health as well as the curing of disease. He must be brought into the position of a rightful leader and skilled adviser in all that appertained to the social life and welfare of his district. This implied that his education must give more heed to preventive medicine and social service.

For an adequate medical service, efficiently staffed, there must be in each locality adequate buildings and equipment for diagnosis and treatment and for the housing of health services. Here State aid and central control were needed.

Outlines of Scheme.

Sir Bertrand Dawson next sketched the lines along which such development should proceed, first discussing the provision of hospitals and clinics, and the organisation of the local machinery of health. In each community the health organisation and the intellectual life of the doctors should be brought into close relationship; this would lead incidentally to closer coöperation among the doctors and greater freedom for recreation and repose. The local hospitals and clinics should be grouped in relation to central hospitals in larger towns, which would provide consultants and specialists for the district. Round the central hospital should be gathered health services, both preventive and curative, more amply provided with equipment and personnel than those of the local hospitals; and the central hospitals might, in turn, be subordinate to a still larger provincial hospital.

Dealing broadly with administration the lecturer held that the buildings and equipment of hospital clinics and laboratories should be constructed and maintained by the health authority. Professional and technical questions must be determined solely by the doctors; administrative questions by a health board, which should be composed of lay and medical members, in no case chosen from an area smaller than a county or large borough. In larger questions of policy the health boards should be controlled by the Ministry of Health. Whatever the actual plan, the principle must be maintained that technical matters were decided by medical men, thus putting right one of the errors of the Insurance Act. The skilled must be no longer under the control of the unskilled. Whilst the clinics and institutions should be controlled by doctors, it was clear that the doctors should be subject to an expert court of appeal; there should be a system of medical administration and appeal right up to the central body advising the Minister. The relationship of this scheme to the administration of the Insurance Act was discussed in general terms. Insured persons would be on the panel of their chosen doctor as heretofore, but would have the right of all citizens to the advantages of the buildings and equipment of the medical services. The insurance authority should be represented on the local health board, but it should not directly control the local clinics and hospitals. For a high standard of professional work it was essential that doctors should treat their own cases in the local hospital, with access to specialists when necessary.

From all this it would follow that more of a doctor's earnings would be by salary and less by fees; in fact, it would be a part-time salaried service. A full-time salaried service for all doctors, with the abolition of private practice, would be gravely detrimental to the best interests of both patients and doctors. Medicine stereotyped under such a system would become a soulless machine. Under the service which he proposed the lecturer anticipated that the public health would be guarded, and the beginnings of disease detected and dealt with at a stage when treatment was likely to be effective. The means of collective investigation and institutional treatment would be at hand. Further, the trusted medical man of the patient's choice would be more efficient because of the opportunities for self-improvement given to him. With regard to remuneration, justice demanded reform; adequate payment and reasonable conditions should be afforded to medical men so that they might do good work and live a reasonable life without anxiety. On the other hand, the number of patients whom a doctor undertook charge of should be more strictly limited. So long as huge panels were allowed pecuniary reward went too much to the man with physical endurance and plausible tongue, and too little to the man with brains and conscience.

Ministry of Health.

Turning to the proposal for a Ministry of Health, the lecturer regarded the setting up of a central authority to guide, inspire, and control the activities of the medical service as the most pressing of all reconstructive needs. The

political difficulties in the way of creating an independent department were great; expediency therefore suggested administrative association of the new Ministry with the Local Government Board and the Insurance Commission; but if this plan merely aimed at convenience of organisation without implying a wider outlook for the new Ministry than that of the Board and Commission, then the suggestion must be opposed. The Ministry would need to draw to its councils representatives from all departments of medicine, and these councillors must have real power with direct access to the Minister. The profession for its part must realise the weight of its responsibility, close its ranks, work out a sound policy, and improve its organisation for expressing its views. Thus it would secure that proper influence in public affairs which it now lacked as a collective body.

II.—THE TEACHING HOSPITALS.

The lecturer said that the primary function of the teaching hospital was education and research rather than the serving of the clinical needs of the district in which it was situated. The local or central hospital belonged to its town or county, and should be under the new health authority; the teaching hospital belonged to the nation, and should be affiliated to a university or the Ministry of Education. Attached to the teaching hospitals would be various institutes where the domains of medicine and social service would meet, such as maternity care, infant welfare, school hygiene, trade and occupational diseases, tuberculosis, venereal diseases, &c., and be directed by distinguished specialists who would be on the staff of the hospitals. These institutes would give post-graduate training to doctors and instruction to nurses and social workers. No doctor would be eligible for a post at a health clinic without evidence of special study and knowledge.

The Staff.

Elections to the staff of a teaching hospital should not be exclusively in the hands either of the staff or the administration of that hospital. An academic council, carefully selected by the university, should also have powers of recommendation. The numbers of physicians and surgeons should not always conform to a fixed standard, nor should it be a necessity forthwith to fill a vacancy. The distribution of beds into a fixed number per member of the staff should cease, and when a physician or surgeon resigned the exact number of beds allotted to him should not of necessity descend to his successor. All members of the staff should have beds, beginning with a few; then if there grew up a man of promise and reputation his clinic would be developed and his beds increased; in this way a clinic would grow up round a man instead of a man being sought out to inherit a clinic. Each hospital should develop those departments which corresponded to the talents of its teaching staff. A junior member of the staff proved to possess one or more commanding talents should be given increasing opportunity and equipment, and there would grow up a great department and clinic round *the* man. There would not only be beds for medicine, surgery, and special subjects, but beds would be available for collective investigation; he would allocate roughly half the beds to provide each member of the staff with a fixed minimum and the remaining half to strengthen the clinics above referred to and for collective investigation. By such a plan power would go to the most efficient, and the intellectual life of the hospital would be led and inspired by a few men of outstanding abilities. He did not advocate the appointment of a professor of medicine and of surgery with complete control in his department; these had become subjects too big to be compassed by the brain of one man.

Terms of Service in Teaching Hospitals.

He was opposed to the universal application of a whole-time principle to teaching hospitals, for it would produce a narrow caste of academic men aloof from the problems and difficulties presented by disease in the world of action, and so unsuited for the training of general practitioners; further, it would be unwise to eliminate entirely the unconscious stimulus to effort which the earning of professional income affords. On the other hand, many a promising man had been spoilt by the combined effects of unpaid hospital routine and the early struggles for consulting practice. He thought a limited application of the principle was sound. For the first five years after his appointment every member of the staff should be a whole-time officer and forbidden private practice; he should live in or near the hospital and be paid an adequate salary. During this time he should apply himself to training, teaching, and research; he would discover his bent, and make manifest his worth. For the succeeding ten years he should give half his time to the service. Members of the staff whose gifts were entirely academic should have facilities provided by which they could remain whole-time workers at a salary. To avoid staleness and parochialism, members of the staff should be sent away periodically for three to six months on tours of study. The old-fashioned line of demarcation between the work of the physician and surgeon should cease. Half of their beds should be common to both of them, corresponding to the idea that a large number of diseases have both medical and surgical aspects.

Radiographers and laboratory workers should be brought into closer contact with the wards. Each member of the staff should have attached to him, besides his resident officer, two or more clinical assistants, men who had distinguished themselves as residents in some teaching hospital. They would be whole-time workers, devoting themselves to work in their chiefs' wards, to teaching and research, at least one-third of their time being free for study and research work of their own.

Salaries should be adequate but not lavish, according to the amount of time and energy each member of the staff gives to the hospital, and guided by the consideration that junior men require more help in proportion than senior men. It was obvious that some State aid would be necessary. This on a small scale was now in being, grants being paid by the Education Ministry, the Local Government Board, and the Medical Research Committee. No doubt the Health Ministry would subsidise health clinics. Such a policy of State subvention was elastic and compatible with the continuance of voluntary support combined with adequate central control. Teaching and research in England were still starved.

The scheme he outlined, whilst modifying methods, upheld the ideals of English medicine, the essential principle of which was that the student should be taught his profession in the wards by personal contact with the sick, learning to observe, inquire, and understand, being trained in knowledge and sympathy, and training his powers of intuition, without which he could never reach the best in clinical medicine.

Post-Graduate Teaching.

Post-graduate study should be encouraged, and doctors should be given "study leave" periodically, during which their salaries should be continued. He looked forward to a comprehensive scheme of post-graduate study, coördinated with similar schemes in allied countries, whereby we should widen our mental horizon and constantly extend our knowledge.

Early Diagnosis: The Beginnings of Disease.

The more early the diagnosis the more preventive and successful became the treatment. We needed the early diagnosis of the clinic, followed by the preventive treatment of the sanatorium and the spa, which were especially needed to combat the effect of "strain" which was produced by the increased speed of modern life. "Strain" might manifest itself in several forms. 1. It might affect the arteries, producing eventually aortic disease, arterio-sclerosis, and cerebral hæmorrhage. 2. It affected metabolism, producing gout or nephritis. 3. Or it might show itself in the plain muscular fibre of the body, producing atonic dyspepsia and constipation, and leading later to such conditions as intestinal stasis, visceroptosis, and colitis. For these repose and regimen were necessary.

Sanatoria and Spas.

On the outskirts of a big city there should be organised *sanatorium* treatment, with provision of a sanatorium, open-air bungalows, equipment for physical culture, baths and other forms of hydrotherapy, games and mental diversion, the whole organised and controlled by a highly trained medical staff. In such an institution patients would live for a time (say six weeks); each would eat his prescribed diet, pursue his exercises and games, take any baths or other treatment prescribed, and his mental surroundings would be restful yet cheerful. Such treatment would often be compatible with, and indeed aided by, the pursuit of his usual employment. He would be shown how to keep health and prevent disease, and such an organisation would afford

opportunities for research and study into the beginnings of diseased processes.

The spa was another application of the same idea but on a larger scale, where the patients rest from their ordinary avocations. Natural waters were a useful adjunct, but were quite subsidiary to the climate, position, and careful organisation of régime and environment, mental and physical. Many of the most successful spas in Europe were those whose waters had no special qualities. Amongst the features needed were the following: good natural position—the whole resort planned so as to present the various treatments efficiently though pleasingly and in an environment of beauty and repose; physical culture in its various forms, with ample accommodation for games which, though remedial, would be attractive; baths and all forms of hydrotherapy; electrical treatments; music and other entertainments which rest and divert, but do not excite, the mind; suitable dietaries so arranged as to be attractive and not irksome. Natural waters, though advantageous as an addition, were in no way a substitute for the foregoing necessities. The running of such a spa presupposed guidance and control by the doctors, acting in conjunction with a far-sighted municipality ready to spend adequate capital in laying out its resort on generous and comprehensive lines, and hotels designed and administered for those in search of health. Spas needed clinics, special hotels, and sanatoria, all working together for a common object. The need and opportunity were great, with many of the continental resorts henceforth closed to us. Resorts fulfilling the conditions laid down for city sanatoria had a great future of usefulness and should be brought within the reach of all classes. They would repay their cost many times over from the increased health and robustness of those visiting them and on account of their wide usefulness.

THE CASE FOR A STATE MEDICAL SERVICE RE-STATED

BY THE PRESIDENT AND HONORARY SECRETARY TO THE STATE MEDICAL SERVICE ASSOCIATION,

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THE suggested Ministry of Health has aroused considerable interest amongst the public in matters affecting the health of the nation, and it has vividly brought before the medical profession the great question as to how it can best serve the community as guardian of its health and physical well-being.

Both lay and medical men are realising that with the formation of a Ministry of Health changes in the relation of doctors to the public must quickly follow, and it is recognised that some form of organised medical service will be called for. Just as in the past there has been a hopeless multiplicity of Government departments concerned with matters of health, leading to waste of energy and money and a lack of efficiency, so has there been a similar want of organisation in local administration and in the various services rendered to the public by the medical profession.

All are agreed that organisation is called for centrally, locally, and amongst individual members of the profession, and at the present time much discussion is going on as to the particular lines such organisation should follow. Under the circumstances it is not surprising that suggestions for a State Medical Service should receive their share of attention, and it may be of some use to state the case for such a service once again and to see how far other opinion is leading towards that solution.

The Five Essentials.

In order to build up a system of preventive and curative medical treatment which will secure to *all* the maximum measure of health the following reforms are essential:—

1. A Ministry of Health with a president of Cabinet rank, assisted by an advisory medical board.
2. A Medical Research Service.
3. A widened and improved Public Health Service.
4. Close coöperation between the preventive and curative medical services.
5. A Public Clinical Service.

There is very little disagreement of a serious nature in the medical profession regarding the first three suggestions, and as regards the third it is now generally recognised that in the future there must be a much closer coöperation between the Public Health Service, which serves the community, and any clinical service which will serve the individual. The scope and aim of preventive medicine should embrace much of what is now differentiated as curative medicine, and clinical medicine should include much preventive work. The higher development of scientific medicine is to prevent disease in communities rather than to cure it in individuals, and therefore both the preventive and clinical services should work together for this end.

The necessity for a better organised clinical service is also now widely admitted on general principles, but there is considerable divergence of opinion as to the nature, extent, and functions of such a Public Clinical Service. Before stating the views of the State Medical Service Association it will be well to epitomise those of some other associations of medical men.

Views of the British Medical Association.[1]

The British Medical Association is in favour of a Ministry of Health the administrative functions of which should be carried out by members representing on an equal footing the preventive and clinical sides of medicine, and in each administrative area there should be whole-time administrative medical officers for both clinical and preventive purposes.

In each local area the medical staff should be of the following classes: (*a*) exclusively for administration and inspection; (*b*) resident medical officers to institutions and those in charge of special clinics; (*c*) pathologists; (*d*) those engaged in giving advice and treatment to individual persons otherwise than under (*b*). Class (*a*) should be whole-time salaried officers; (*b*) and (*c*) should be salaried officers, either whole-time or part-time; whilst (*d*) should not be salaried officers, but should be remunerated either for actual items of work done or for the number of persons for whom they accept responsibility.

There should be hospitals, clinics or treatment centres, and pathological laboratories within each area, with possibilities of consultations open to all who are entitled to the advantages of the public scheme. Voluntary hospitals would be necessary and should be encouraged. Visiting practitioners and consultants at both public and voluntary hospitals should be paid for their services in proportion to the number of patients coming under the public scheme for whom they accept responsibility.

Views of the Panel Medico-Political Union.[2]

The Panel Medico-Political Union is in favour of a Ministry of Health, but against any form of whole-time State medical service for general practitioners. It would support any improvement of the present State service in any direction which would conduce to the public welfare. It favours a large extension of hospitals and the formation of public clinics and treatment centres. It sees no reason why consultants, specialists, and pathologists should not be salaried officers, whole-time or part-time. It insists that the principle of free choice of doctors and free choice of patients is one of vital importance and must at all costs be retained. If it can be properly safeguarded, the union has no quarrel with a whole-time salaried State service confined to its proper sphere.

Views of the London Panel Committee.[3]

The London Panel Committee is in favour of a comprehensive scheme of coördinated provision of preventive and curative treatment of disease for all classes of the community. Under the local authorities there should be established two distinct departments of the medical services, the one dealing with the public health services, the other with individual health questions, both preventive and curative, with close coöperation between the two services. It desires to see the public health services improved.

With regard to the clinical service, it is opposed to any system of whole-time medical officers except administrators, resident medical officers, and practitioners specially devoting

[1] "A Ministry of Health," The British Medical Association.
[2] The Medical World, March 1st, 1918.
[3] The Medical World, March 8th, 1918.

themselves to limited sections of professional work. It considers that medical assistance in the home should be given by a part-time service of general practitioners remunerated by capitation grants and assisted by a part-time service of consultants and specialists.

Finally, as regards institutional treatment it would have municipal hospitals established with general practitioners on the staff, such hospitals to be linked up with the voluntary hospitals, thus leading to the easy transference of patients from the one hospital to the other.

Views of the Society of Medical Officers of Health.

The Society of Medical Officers of Health, being of opinion that many forms of treatment (as for tuberculosis and venereal diseases) are in reality preventive measures, claim that all such measures come under the heading of preventive medicine, and that they can be best dealt with by an extension of the powers of existing Public Health Departments.

Points of Agreement and Disagreement.

It is thus seen that all these bodies are in favour of some form of clinical service so coördinated as to bring within the reach of all such patients as would come under the public scheme the benefit of easy access to consultants and specialists and of institutional treatment. The importance of "free choice of doctor" is insisted upon, whilst a salaried service of general practitioners, either whole-time or part-time, is opposed. All schemes imply some limit to those entitled to the benefits of the service, presumably by means of an income limit.

Views of the State Medical Service Association.

The State Medical Service Association is in entire agreement with these bodies as to the necessity of a complete and well-organised clinical service, including general practitioners, consultants, specialists of all sorts, and pathologists.[4] It would go further and also include within the organisation of the service dentists, midwives, nurses, and dispensers. Differences of opinion, however, occur when it comes to part-time medical officers remunerated by capitation grants and to the question of excluding patients whose incomes are above a specified limit; for advocates of a State Medical Service are of opinion that no permanent system of medical service can be satisfactory that is not free and open to all and that is not officered by whole-time salaried practitioners. The reasons for these views may be briefly summarised.

A Free and Open Service.

The Public Clinical Service should be free and open to all:—

1. Because health is of national importance, and likewise disease is a national danger. The health of the individual is consequently of national concern.

2. Because health and not the purse is the factor determining the needs of the individual. Disease being no respecter of persons, science in dealing with its prevention and cure cannot afford to be so.

3. Because a service organised for the poor is bound to be unpopular and inefficient, even as the Poor-law service has been in the past.

4. Because modern methods of diagnosis and treatment are becoming so elaborate and costly that people of even considerable means are quite unable to afford them.

5. Because an enormous amount of disease remains undetected and untreated, as shown by medical inspection of school children and medical examination of recruits.

6. Because the service should be in a position to seek out disease in its beginnings and to watch over contacts in cases of infectious diseases, which is impossible under any system of private practice in which the doctor has to await the call of the patient, who may be far advanced in illness before he thinks fit to send for him.

A Whole-time Salaried Service.

The service should be a whole-time salaried service in order—

1. To secure the fullest possible coöperation and mutual help between all practitioners in any given area. This is impossible under a system of remuneration by fees or by capitation grants.

2. To secure a good distribution of practitioners according to the needs of a locality. A comparison has often been made between Bermondsey and Hampstead to show the present inequalities.

3. To secure some regulation of the hours of work and regular holidays. With general practitioners all working together in a given area it would be possible for each of them to have certain hours "off duty" every day and generally one day a week and a regular annual holiday.

4. To secure that every practitioner should have, say, three months' education leave every third year.

5. To secure that men of age and experience shall not waste their time on work that might equally well be done by junior assistants or even trained nurses under supervision, time which might be employed in the more highly skilled departments of medicine and surgery.

6. To secure that there shall be no divided interests between a doctor's public and private work.

7. To secure freedom to all practitioners to give unfettered support to matters of importance to the public health. With members of public health committees or influential offenders against public health interests as private patients this is at present difficult.

8. To set the practitioner free from the competitive struggle and so enable him the better to devote his time to the advancement of knowledge.

Incidentally a whole-time salaried service would have further advantages. Practitioners would be relieved of a great deal of vexatious clerical work, of book-keeping, of sending out bills, and of haggling with patients over fees. There would be no bad debts and no necessity for debt-collecting agents. Salaries would be secure and regularly paid and doctors who have served the community would be entitled to a pension on retirement.

Central and Local Administration.

The scheme suggested by the State Medical Service Association would be centrally controlled and kept up to a high standard of efficiency by the Ministry of Health. It would be administered locally by the county and county borough councils and by the councils of the larger boroughs and urban districts. Hospitals for the use of the service would be greatly increased in number, partly by taking over and re-modelling the Poor-law infirmaries, partly by utilising many of the present military hospitals after the war, and partly by new construction.

The voluntary hospitals should be given the option: (*a*) of being taken over entirely by the Ministry of Health or the local authorities; (*b*) of receiving grants from the public authorities provided they were maintained at a proper standard of efficiency; or (*c*) of remaining on an entirely voluntary basis.

The local administering bodies would be responsible for the cost of their medical services, assisted by substantial "grants-in-aid" from the Ministry of Health according to the completeness and efficiency of the service.

The Service and Free Choice of Doctors.

The work of the clinical service would centre round the hospitals or treatment centres in close touch with the hospitals, and general practitioners would share the clinical work and form an integral part of the staff of the hospitals, so giving opportunities for specialisation. They would work in groups, the number in a group depending on the size and character of the locality to which it was attached. There would be senior assistant and junior assistant practitioners in each group, and promotion would be determined partly by merit and partly by length of service.

Patients residing within the area would ordinarily have the free choice of any of the doctors belonging to the group. In the best interests of both patients and medical staff it would be necessary to devise means for preventing an uneven distribution of work, and also for dealing with objectionable and frivolous patients. This could be accomplished by having a Committee of Assignment of doctors and patients, which would allow, as far as possible, free choice of doctors by patients and of patients by doctors, and this would give as much freedom of choice as there is in private practice at the present time.

In addition to the various grades of practitioners just mentioned, there would be junior to them such posts as clinical assistants, resident medical officers, and medical and surgical registrars, and senior to them there would be

[4] The S.M.S.A. includes, of course, within these categories women as well as men, and considers that the former should stand on an equality with the latter in every respect.

many central and local administrative medical officers, to all of which posts practitioners should be eligible.

No Bureaucracy.

It will be of the utmost importance to make sure that the Public Clinical Service of the future shall not be organised and managed in any bureaucratic spirit, which might not only make the conditions of service intolerable, but might tend to stamp out individuality and initiative. There will be three interested parties—the tax-payers, the patients, and the doctors—all of whom must have a say in the administration of the service. The tax-payer must have a voice in the expenditure of public moneys, the patients must have a court of appeal if dissatisfied, and the doctors must be left to manage all purely medical matters and must be given the predominating voice in determining the conditions under which they will serve the community. The function of the central organisation must be to stimulate and suggest and see that an active progressive spirit is maintained, but freedom must be left to each local authority and medical group to expand and develop its plans.

The Transition Stage.

Whilst a service such as that indicated above is thought to be ultimately in the best interests of the public and of the medical profession, it is fully recognised that it would be impossible and unfair to existing interests to force it suddenly on to the profession by Act of Parliament. There must be a transition stage during which considerable latitude must be given to men and women now in practice.

It has already been suggested in many quarters that the medical benefits of the National Insurance Act should be extended to all dependents of those now insured and to all Poor-law patients. This may be the line eventually adopted, though it will be regrettable unless drastic amendments to the National Insurance Act be previously made. Later on, by gradually raising the income limit, the scope of the service could be widened more and more until at last no one would be excluded from the benefits of the service.

At first, therefore, it may be necessary and probably beneficial, in order to avoid one medical service for the rich and another for the poor, to have part-time medical officers of the Public Clinical Service. On the passing of any Act of Parliament establishing a public service all registered medical practitioners might be given an option, to be exercised within a reasonable time, of becoming either a part-time or a whole-time medical officer, but anyone qualifying and electing to join the service after the passing of the Act should be accepted only as a whole-time salaried officer. In this way there would gradually be built up a whole-time salaried medical service.

As regards the method of remuneration of those electing to serve as part-time medical officers, it may be either by salary or by a capitation grant, only in the latter case the number of panel patients allowed should be strictly limited, as the practitioner's time would be partly occupied in private work. Those electing to devote their whole time to public work should be paid by salary, which should be based upon their previous professional status, and they should be guaranteed a pension and some compensation for the capital value of the practices which they abandoned. The latter could take the form of a capital sum on retirement or an increased pension.

Even when the public medical service became free and open to all, there would probably always be a few patients who would prefer not to avail themselves of it, and similarly there may always be a few medical men who would prefer not to enter the service. There would be no objection to the latter competing for the former in private practice, provided always that they conform to all laws passed on behalf of public safety and national health.

Now is the Time.

In conclusion, it may be pointed out that there are several reasons why a Public Clinical Service should be considered at the present time.

In the first place, the war is depleting the ranks of the medical profession by death and disablement, and at the same time conscription is so denuding the medical schools that there must be a serious shortage of doctors in the near future which it will take many years to make good, and the evils of which can only be overcome by organisation and coöperation.

Alongside the shortage of doctors, the work which must be undertaken is likely to increase. There will, unfortunately, be a large number of soldiers permanently disabled for whom medical supervision will be necessary, and there will be many widows and orphans unable to pay doctors' fees, but whose health must be preserved for the sake of the rising generation. Again, it is not improbable that there may be outbreaks of bacterial disease introduced into this country by the home-coming Army.

Again, some 10,000 medical practitioners have left their peace-time work and joined the R.A.M.C., and, in spite of the good intentions of their colleagues who have remained at home, their practices, to all intents and purposes have passed into other hands. A practice can be left in charge of a colleague for six months or so without very serious damage, but not so for three or four years. When the men of temporary rank in the R.A.M.C. return they will have little heart to set to work to rebuild their lost practices, but they will probably be ready and willing to continue to serve the community by administering to the needs of the civil population under conditions of work not unlike those under which they have served the military forces.

Lastly, at the end of the war there will be a great number of well-equipped temporary hospitals, nursing staffs, and a large accumulation of motor ambulances, motor-cars, surgical instruments and appliances, and pathological and X ray outfits which could be utilised with great economy for the establishment and maintenance of a Public Clinical Service, and for special hospitals and sanatoria required by the preventive branch of the National Service.

Some form of Public Medical Service is bound to come in the near future, with whole-time salaried medical officers, if only because from the administrative point of view it will be so much less complicated and so much more economical than any form of part-time service. It is therefore urgently necessary that all practitioners should unite to ensure that when it does come it shall be a service that shall be honourable to the best traditions of the profession and of the greatest possible service to the community.

MEDICINE AND THE STATE.[1]

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THE proper relationship which should subsist between the State and the profession of medicine is a question in which a constantly increasing number of medical men as well as of the general public is beginning to take an active interest.

Present State of Opinion.

At the time of the introduction of the Insurance Act the medical profession, so far as it had given thought to the matter, was roughly divided into three parties holding diverse views upon this subject.

An extreme right party held that beyond securing the proper education of registered practitioners, and providing from amongst them a service of sanitarians to safeguard our system of drainage and to control epidemics of disease, the State should leave the medical profession a free hand to carry out its beneficent work in absolute independence of all Government control.

An extreme left party saw salvation in the proposal of the Fabians that the State should become the direct employer of every medical man to whom it granted registration, and should make itself responsible for seeing that its medical servants faithfully carried out its instructions in offering to, or forcing upon, each member of the community such medical ministrations as the State deemed necessary for the maintenance of his physical health.

Between these two sections was a larger central party who, recognising the impracticability, whatever they might think of the idealism of these extremists, held that the time had arrived for the State and medicine to enter into an honourable partnership in order to secure that the benefits of our rapidly advancing medical science should be made available for the population as a whole as well as for each individual, irrespective of wealth or social position.

[1] An address to the Southwark Panel Practitioners' Association, May 31st, 1918.

Four years of war have altered our views of the nature and urgency of many problems, as well as of the best ways of dealing with them. There still remains a small army of devoted individualists in medicine prepared to die in the last ditch before they will surrender the smallest outpost of professional liberty. On the other hand, our experience of the efficacy in war-time industry of substituting coöperation with, in place of control over, workers of all kinds is leading many medical men and others formerly devoted to the State service ideal to join hands with the central party in endeavouring to formulate conditions under which the profession and the State can jointly work as equal and friendly partners for the national welfare.

The schemes for the formation of a Ministry of Health put forward by various organisations, lay or medical, are tentative proposals for preparing the way for such a partnership, but I do not here criticise any of these schemes in detail, but discuss certain general principles of governmental and professional organisation which must be borne in mind if any permanently successful coöperation between medicine and State is to be forthcoming.

A National Medical Council.

Some of the most interesting proposals for industrial reconstruction recently suggested are contained in the Interim Report on Joint Standing Industrial Councils prepared by the subcommittee, of which Mr. J. H. Whitley, M.P., was chairman. (Cd. 8606. Price 1*d*.) Although these proposals are primarily intended for the promotion of cordial relations between, and efficient joint output by private employers of labour and their workpeople, they are clearly equally applicable where the State or a local authority is jointly engaged with professional men in rendering any sort of service to the community.

The majority of Government departments seem to have failed to recognise the applicability of the recommendations of the Whitley Committee to the large class of activities in which they themselves play the part of the employer. But already there are indications that these departments will have to give way under the stress of public opinion, and that joint councils of representatives of Government employees and of the officials of the Government departments concerned will be constituted on the lines of the Whitley Report.

In order to secure an effective partnership between medicine and the State the establishment of a Joint National Council based on these principles is probably one of the most important steps. Its existence at the present moment would be of great benefit to the country. To such a body would naturally be referred the many difficult problems which have for so long held up the establishment of a Ministry of Health.

Such a Council would be an entirely different body and would have quite different functions from the General Medical Council. It would be a joint medical and lay body, regard being paid, so far as the medical representation is concerned, to the "various sections of the industry and the various classes of labour employed"—to quote the words of the Whitley Report. It is now the duty of the medical profession to consider and decide how the due representation of all classes of the profession shall be secured upon such a National Medical Council and to persuade the Government to arrange for due representation of appropriate lay interests.

Functions of a National Medical Council.—Such a Council, "meeting at regular and frequent intervals," should be of great national advantage in securing the constant progress of medicine and the constant application of such progress to the common good. Not only would such a Council assist coöperation between the Government and the profession, but it would also help to solve the many difficult problems involved in the proper relationship between the various Government departments interested in health questions.

Let it not be thought that such a National Medical Council can undertake the duties of the General Medical Council, or the British Medical Association, or the Royal Society of Medicine, or the Panel Practitioners' Medical Union, or the Association of Panel Committees, or any other of the many purely professional bodies promoting or safeguarding professional interests, educational, economic, and scientific. It can no more undertake these duties than it can become a substitute for the Insurance Commission, the Local Government Board, or the Ministry of Health. Its duty is to form a connecting link between the profession and other bodies concerned, in order to look out for all possible channels of progress and to promote smooth working by ensuring thorough mutual discussion of economic and administrative problems as they arise, and even before they arise.

Constitution.—Having regard to the importance of such a National Council's work the profession must jealously guard its status and its representative character. Definitely brought into being to safeguard general national interests, it must not be regarded as an instrument of any particular Government department. It must not be a mere advisory committee to the Ministry of Health. The non-medical members must not consist solely of representatives of the Civil Service, nor of the political party or parties for the time being constituting the government.

Independent men of high standing in science, commerce, and philanthropy should have due representation on such a Council not as nominees appointed by the Crown, but by direct election by such bodies as the Royal Society, the British Association, or the British Hospitals Association.

So far as the medical representation is concerned the profession should stand firmly for the right to elect directly its own representatives. Basing its claim on the Whitley Report it should demand that different classes of the profession should have adequate representation, and above all that the general medical practitioner upon whom ultimately falls the chief burden of safeguarding the public health shall be entitled to send to the Council a due proportion of men experienced in this special class of work. Joint councils, similarly constituted, should also be established in local health areas throughout the country.

A Ministry of Health.

The war has given a great impetus to the demand which has for many years been made by the medical profession that a special department of the Government should be established to control and coördinate the activities of the State in connexion with health problems. The immense number of the population who have been found to be physically unfit to take their due part in fighting or in any other work of national importance has brought home to us our serious neglect in protecting our people against preventable health deterioration. We have learnt by practical experience that the health of the individual is a vital consideration in all human activity, as interesting to the nation as to the individual himself.

When we come to look into the matter we discover that practically every Government department has gradually set up for itself a separate organisation for dealing in some way or other with the ill-health which, unprevented or unchecked, becomes a serious bar to its effective work. At all conferences where health problems have recently been discussed attention has been drawn to the multiplicity of Government agencies which may at the same time be dealing with the prevention or cure of disease in the same community, in the same family, and often in the same individual. It is well that this condition should be brought home to our legislators, for the overlapping, waste of energy, and positive harm to health that may be induced by this confusion calls urgently for reform.

Relationship of a Ministry of Health to the Health Work of other Government Departments.—A first step in the direction of such reform is undoubtedly the establishment of a Government department whose primary and sole preoccupation shall be the maintenance of national health. To this end every assistance should be given by all members of the profession towards the promotion of a Ministry of Health. But it must not be imagined that such a Ministry can be made responsible for all Government activities in which health problems are of importance. We are beginning to recognise that no Government department can afford to disregard the effect of its work upon national health or the effect of national health upon its work, any more than it can disregard the interdependence of its work upon national and individual finance. We shall shortly be compelled to appreciate in matters of health that our new Ministry of Health will have to bear towards all other Government departments a relation similar to that which in matters of finance the Treasury at present bears to other departments of the State.

The Ministry of Health must not be handicapped by dealing with matters outside its proper province merely

because it may be urged that such matters are intimately bound up with questions of health. It must not deal with local government merely because local authorities have great health responsibilities. It might equally be urged that the Ministry of Health should manage the Army and the Navy, because no troops can carry on a successful campaign unless their health is properly safeguarded. The Ministry of Health must not be responsible for the general details of the housing problem, although the national health is vitally concerned with its proper solution. It might equally be urged that it should be made responsible for the work of the Board of Agriculture and Fisheries, because without proper and sufficient food no nation can be healthy.

The care with which Parliament has restricted the work of the Treasury to purely financial problems, though allowing it to intervene indirectly in the work of other departments sinning against the principles of sound finance, must be equally exercised in restriction of the scope of the work of the new Ministry.

The Primary Classification of Professional Functions.

Assuming the establishment of a Ministry of Health with properly defined functions and with properly arranged relations to other Government departments, its success will very largely depend on its effective use of the professional material at its disposal. It is quite certain it will have no superfluous material to use extravagantly if it sets out to provide the amount of medical service which public opinion demands shall be provided in order to maintain the high standard of national health to which all look forward. Economy of doctor-power, seriously depleted by the war, will demand a careful division of labour and a classification of professional functions.

Domiciliary and Institutional Treatment.—The present chaotic condition of professional organisation has led to erroneous views as to the primary classification of the work of medical practitioners, which if they be not set right at the outset will inevitably lead to extravagance and inefficiency. A common error is to assume an initial division into practitioners engaged in domiciliary, and practitioners engaged in institutional, treatment. Such a classification is particularly unfortunate. It has no value whatever, so far as professional experience and training are concerned. The same patient, with the same disease of exactly similar severity, may at one time require for his condition institutional, and at another time domiciliary, treatment. The most unimportant variation in his home conditions or in his momentary financial circumstances may determine the need for one or other form of treatment. It may fall to the duty of the same medical practitioner to treat the same patient at one time in his home, at another in the hospital.

It is highly desirable that all medical practitioners engaged in domiciliary treatment should also have opportunities of undertaking institutional work, so that a classification such as has been suggested would be directly detrimental to extension of desirable professional experience. It is probable that our social conditions after the war will greatly increase the amount of institutional treatment required for cases of slight severity owing to the difficulty of securing domestic service in the homes of the middle classes. From every point of view such a classification is unscientific, and therefore unsatisfactory.

Preventive and Curative Medicine.—Another equally erroneous classification of the profession is that into practitioners of preventive and practitioners of curative medicine. The idea that this is a natural division of our professional functions is even more widely held than the erroneous idea already referred to. At first hearing it sounds plausible, but if acted upon in carrying out any large scheme of professional reorganisation it would lead to disastrous results.

Nothing is more important for professional progress than that every medical practitioner, whatever the actual scope of his work, should have always in mind that prevention is better than cure, and that every curative measure he may employ should be considered from the point of view of its ultimate effect in the prevention of further recurrences of disease and the maintenance of the patient's future health.

The intellectual interest in the diagnosis of diseased conditions, the spiritual joy of rendering help to the suffering, and the natural pleasure of watching the immediate effects of one's therapeutic efforts have always led the profession to take a greater interest in the curative side of its work. The call of the sick to be made healthy has always been more insistent than the call of the healthy to be kept from becoming sick. Even amongst the angels there is more joy over one sinner that repenteth than over ninety and nine just persons who need no repentance.

The natural logic of events has always laid the profession open to the taunt that it was more interested in disease than in health. A reorganisation of the profession based on the idea that a large section of its personnel should be definitely ear-marked as set apart for curative work only would crystallise a condition which all who have given thought to the matter regard as wholly undesirable.

Basis of Classification.—The natural and scientific classification of professional functions that must form the basis of the professional reorganisation to be promoted by the Ministry of Health is a division of the profession into medical men undertaking the prevention and cure of disease by regulating the conduct and environment of the community as a whole, and those undertaking the same functions for the individual units of which the community is composed—medical officers of public health and medical officers of private health.

The whole outlook, training, and mode of attacking their special problem by these two great branches of professional workers are as different as their ultimate aims are identical. Each branch must constantly keep before itself the greater advantage of attaining their end by preventing conditions which if they cannot prevent they will ultimately be called upon to remove. But the medical officer of public health must work by official regulations, sanitary laws, and compulsory powers, whilst the officer of private health must always rely on individual influence, education in personal hygiene, and patient persuasion.

Whatever may be the extent to which the public will submit to sanitary laws instituted for the protection of the community as a whole, any attempts to secure by compulsion submission to laws of personal hygiene necessary in order to maintain individual health are foredoomed to failure. A Ministry of Health setting out to assist the profession in coördinating its work for the national advantage must recognise this initial classification of professional functions if it is to avoid confusion, overlapping, extravagance, and inefficiency.

Conditions of Service.—Having thus defined the scope of the work of these two great branches of the profession, it is necessary to recognise the resulting implication as to the conditions of service of the medical men composing them. The medical officer of public health whose duty it is to assist in securing a common obedience to national sanitary laws must be the direct servant of the State. On the other hand, the officer of private health must be as free as possible from State control and be placed in the closest relation of trust and confidence to the patient who voluntarily submits his health and life to his medical attendant's judgment and control.

The necessary means of securing these indispensable relations between the medical officer of private health and his patient need not be dealt with here. They are well known to medical practitioners. It is enough to indicate that by most practitioners it is now agreed that, failing the maintenance of completely independent private practice, which is no longer possible, the system set up under the Insurance Act, with certain modifications and improvements, would appear to be the most satisfactory way of meeting the necessities of the case.

The Subdivision of the Work of the Primary Branches of the Profession.

Having established a primary division of the profession into those responsible for public and those for private health, it remains to consider a rational subdivision of these primary groups.

Specialisation as a means to efficiency by subdivision of labour is an essential feature of all modern organisation. In recent years medicine has shown to an extraordinary degree this general tendency. It has also given very striking illustration of the fact that mere subdivision of labour without considered coördination will never secure the best results. The introduction of a Ministry of Health and the definite institution of a partnership between medicine and the State should afford a fitting opportunity for a careful consideration of the most effective use of professional specialisation.

So far as the *medical officers of public health* are concerned the problem is not a difficult one. The introduction of a National Service of such officers, or of local services dealing with areas of adequate size, will provide a staff sufficiently numerous to allow its individual members to take up work in the various departments of public health already recognised, and in those new departments which will inevitably be gradually instituted. Places upon such a staff will easily be found for experts specialising in epidemiology, bacteriology, chemistry, microscopy, dietetics, and all other sciences forming the basis of sanitary science generally. The principles governing the inter-relationship of such workers will not be difficult to define.

It is when we come to the *officers of private health* that difficulties will arise, difficulties which will be all the more acute because of the want of system in specialism as it exists in ordinary private practice to-day. Difficult as the task may be, it must be grappled with if the nation is to profit from State intervention in professional organisation. It is impossible to deal with the whole question here. Some general principles only can be touched upon, but they are of great importance. Is there a primary classification of the functions of the section of the medical profession dealing with individual members of the community analogous to the primary classification of the profession as a whole which has already been laid down? Undoubtedly there should be.

The classification clearly cannot be made on the mere question of seniority. This was the method once adopted and even now not entirely discarded by the Army, and it obviously does not work. To assign certain medical duties to a practitioner because he has attained to the rank of major and others to another because he is merely a captain is not a feasible principle of organisation.

Nor is it desirable to classify medical attendants as the doctors of the rich and doctors of the poor. This would be as disadvantageous to the rich as to the poor and as detrimental to the public as to the profession. Nor should we make a primary division of the duties of medical practitioners based on a classification into hospital doctors and non-hospital doctors. Everyone hopes that one of the effects of reorganisation will be to secure continued hospital experience for all medical practitioners.

The essential classification of medical attendants in order to secure efficient division of labour must be a primary division into *general practitioners and specialists*. But to be effective such division must be complete. It will not be altogether popular with either section of the profession, nor, perhaps, in the first instance, with the public. But in the national interest it must be secured. Without it confusion, overlapping, and inefficiency are inevitable.

The rôle and ambition of the general practitioner should be to know something of everything, the rôle and ambition of the specialist to know everything of something. Each must recognise the advantages and limitations of his position. The work of each is of vital necessity to the community. Neither must encroach upon the other's province. The general practitioner only must undertake independent practice. The specialist must frankly accept the position of the consultant to the general practitioner.

Need of coördination.—It is impossible under any scheme of professional organisation for which the State accepts joint responsibility with the profession to permit a continuance of the competition between these two classes of practitioners which exists at present. The State must endeavour to replace such competition by coöperation. Competition and coöperation cannot go hand-in-hand. The general practitioner cannot be expected to make free use of the specialist's services if by so doing he is helping a competitor to compete with him more successfully and ensuring the ultimate destruction of his own practice.

Fortunately for those whose duty it may be to introduce this system of division of labour and coördination of work into the profession of medicine, there already exists in a sister profession an example of the process in full working order. The relations between the barrister and the solicitor which exist in this and some other civilised countries afford a satisfactory precedent for the conditions which must ultimately prevail in medicine. For all practical purposes it may be said that no barrister undertakes independent work for a client. He acts always as a consultant for a solicitor.

A primary division of medical attendants which would establish two classes of practitioners bearing to each other the relations existing between barristers and solicitors would be a big step towards ensuring to the community the advantages that should accrue to them from specialisation in medicine, advantages which, under present conditions, are undoubtedly denied to the largest sections of the population.

If the State and medicine are to work successfully together for the common good each must be willing to concede something to the other. The State is learning that in complicated technical industries it must allow the workers a fair measure of liberty and independence if high ideals and progress are to be given opportunities of development. Industries are learning that they cannot effect the fullest national service without receiving some measure of State assistance necessarily involving a certain degree of State control. These general principles must be recognised by the Government and the profession if the highest aims of medicine are to be attained.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending July 15th:—

	£	s.	d.
Dr. Montagu Cuteliffe	1	1	0
Lady Gordon*	5	0	0
Anonymous	0	12	0
Dr. J. A. Wilson	1	1	0
Mr. T. N. Eastland	1	0	0
Dr. Eveline Cargill	2	2	0
Dr. A. Bowe	1	1	0
Dr. Osborne Johnson	1	10	0
Dr. J. W. Papillon (quarterly)	0	10	6
Capt. A. N. Singer, N.Z.M.C.	2	2	0
Mr. Harold Barwell	5	0	0
Mr. John Dunlop	1	1	0
Dr. R. M. Boodle	1	0	0
Capt. S. J. Irwin, R.A.M.C.	5	5	0
Sir H. Bell Longhurst	5	0	0
Dr. John L. Speirs	2	2	0
Dr. A. Laslett	2	2	0
Dr. R. H. Steen	1	1	0
Dr. Charles D. Muspratt	1	1	0
Capt. Wm. B. Jack	1	1	0
Miss R. K. Spencer, M.P.S.	1	0	0
Dr. Faithful Smith	1	1	0
Lieut.-Col. H. Jones, R.A.M.C. (T.)	5	5	0
Dr. D. Yellowlees	5	0	0
Dr. W. E. Scott	3	3	0
Mr. Idwal Parry	1	1	0
Dr. J. Kirk	1	1	0
Dr. J. Farmer	1	0	0
Dr. F. C. Wood	1	1	0
Mr. W. E. Morris	0	5	0
Dr. H. D. Harthan	1	1	0
Dr. F. de Havilland Hall	5	0	0
Sir R. Murray Hyslop†	5	5	0
Dr. Thos. Baker	2	2	0
Anonymous	5	0	0
Mr. E. D. Telford	5	5	0
Dr. W. B. Hunter	2	2	0
Dr. R. E. Lord	1	1	0
Mr. S. H. Campion	0	10	0
Dr. E. M. Johnstone	5	0	0
Mr. C. G. Trinder	1	0	0
Dr. J. B. Hurry	1	1	0
Mr. Fergus F. Stewart	0	5	0
Mr. E. J. Foulkes	2	0	0
Fleet-Surgeon E. O. B. Carbery, R.N.	1	0	0
Dr. Thomas Eastes	1	10	0
Dr. W. P. Dickson	1	1	0
Dr. H. Mallins	1	1	0
Dr. Charles S. Simpson	1	1	0
Mr. Roger Beck‡	5	5	0
Mr. Frederick Williams Messrs. Westmacott and Son	0	10	0
	2	2	0
Miss Harriet M. Jones	0	10	0
Dr. G. A. Grierson	2	2	0
Miss S. M. Ross, M.D.	1	1	0
Dr. Jas. Henderson	2	2	0
Sir John Broadbent	5	5	0
Dr. W. Camac Wilkinson	5	0	0
Dr. Ernest Thomson	1	1	0
Mr. A. Wright	0	5	0
Dr. J. E. Moorhouse	2	2	0
Dr. J. W. Roberts	1	0	0
Dr. W. J. Dewar	2	0	0
Mr. Norman Smith	0	5	0
Dr. A. D. Hughes	1	1	0
Well-wisher	0	5	0
Mr. J. R. Wretts	3	3	0
Dr. W. B. Whitmore	5	0	0
Capt. Russell Steele, R.A.M.C.	1	1	0
Capt. E. D. Gairdner, R.A.M.C. (T.)	3	3	0
Sir R. Hampden Smith	5	0	0
Dr. J. Walker	2	2	0
Mr. G. H. Dawson	5	0	0
Mr. A. F. Burnett	1	1	0
Dr. Bernard Relton	1	1	0
Dr. J. F. Stockwell	5	0	0
Dr. H. M. Rainsford	3	0	0
Surg.-Gen. F. J. Lilly, R.N.	1	1	0
Mr. A. J. Phillips	3	3	0
H. H. E.	5	5	0
Dr. J. Tremlett Wills	5	5	0
Mr. E. S. Upton	0	10	6
Dr. Chas. Lathbury	1	1	0
Lieut.-Col. E. Hobhouse, R.A.M.C. (T.)	3	3	0
Dr. H. J. Wheeler	5	0	0

* Per Dr. Des Vœux. † Per Sir Thomas Barlow.
‡ Per Sir Rickman Godlee.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

SOUTH LONDON HOSPITAL FOR WOMEN.—The anniversary of the opening will be celebrated to-day (Saturday), July 20th, when the hospital will be open for inspection from 3 to 6 P.M., and a concert held at 3.30 P.M. Tickets (including tea), 1s. each, may be obtained from the secretary, South Side, Clapham Common, S.W. 4. A street collection on the same day will take place in Clapham, Balham, Tooting, and Streatham.

Correspondence.

"Audi alteram partem."

THE CULTIVATION OF PFEIFFER'S BACILLUS.

To the Editor of THE LANCET.

SIR,—The paper by Captains Little, Garofalo, and Williams, in THE LANCET of July 13th, is interesting in that it records the recovery of a hitherto unrecognised cause of "influenza" in a series of cases of the present epidemic. But their conclusions that the epidemic is not caused by Pfeiffer's bacillus are at least open to question.

Hitherto it has never been suggested, as far as I am aware, that Pfeiffer's bacillus will grow on a medium devoid of blood, except in symbiotic relationship with other organisms, notably xerosis and staphylococcus, and perhaps after many subcultures. Serum alone is of no use, the bacillus must have blood or derivatives of blood. Captain Little and his fellow workers also rely on not recognising Pfeiffer's bacillus in direct smears, but in the case of such a minute organism as influenza bacillus the evidence derived from direct smears is apt to be fallacious. The fact that no leucocytosis was observed is taken as evidence that the infection was due to some organism other than Pfeiffer's bacillus, whereas it is generally held that the reverse is the case; indeed, in most text-books influenza is usually coupled with typhoid fever as a cause of leucopenia.

The authors lay emphasis on the fact that they have fulfilled two of Koch's postulates, but they have neglected the elementary precaution of demonstrating that the diplococcus referred to is not to be found in normal individuals under the same conditions as their "influenza" cases.

My experience of a smaller number of cases than those examined by Captains Little, Garofalo, and Williams is that I have recovered Pfeiffer's bacillus in every case, a result partly attributable perhaps to the use of an improved medium, an account of which I hope to publish in the immediate future.—I am, Sir, yours faithfully,

Wimpole-street, W., July 14th, 1918. JOHN MATTHEWS.

EPIDEMIC ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—May I be allowed the briefest comment on Dr. F. G. Crookshank's letter in THE LANCET of July 13th *à propos* of my paper on epidemic encephalitis? It is well known that occasionally epidemics of acute poliomyelitis occur at other times of the year than summer and autumn, that occasionally cases like those of the present epidemic of encephalitis are met with during poliomyelitis epidemics, that occasionally meningeal symptoms are prominent in epidemic encephalitis, and so on. What I did was to compare the average case of acute poliomyelitis with the average case of epidemic encephalitis and point out the distinctions, and these distinctions are not invalidated by citation of the exceptional cases in either group.

I am, Sir, yours faithfully,

Harley-street, W., July 15th, 1918. S. A. KINNIER WILSON.

QUICK DIAGNOSIS IN MENINGOCOCCUS INFECTION.

To the Editor of THE LANCET.

SIR,—The article, "A Quick Method of Diagnosing the Type of Meningococcus in Cases of Cerebro-spinal Fever," by Major A. S. Gordon Bell and Miss I. M. Harmer, in THE LANCET of July 13th, is strikingly important from the clinical as well as the laboratory point of view, enabling the physician to exhibit the homologous serum at least 48 hours earlier than has been the case with the ordinary method of "type agglutination."

There is one point, however, on which I do not feel clear, and in regard to which perhaps the writers will enlighten me. Is it not possible that the results obtained were due to antibodies contained in the curative serum which was administered intrathecally, and that these antibodies had found their way into the blood stream?

I am, Sir, yours faithfully,

A. E HODGSON, M.D.,
Captain, R.A.M.C.

Bacteriological Laboratory, Military Hospital, ——, N. Wales, July 15th, 1918.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Died.

Capt. R. A. Sillar, Australian A.M.C.

Wounded.

Lieut. G. Hull, New Zealand A.M.C.
Capt. H. M. Drake, R.A.M.C.
Capt. F. H. Goss, R.A.M.C.
Lieut.-Col. A. H. Moseley, D.S.O., Australian A.M.C.
Lieut. W. S. Gross, R.A.M.C.
Major J. A. Pridham, M.C., R.A.M.C.

Missing, believed Drowned (through the Torpedoing of the Canadian Hospital Ship "Llandovery Castle").

Lieut.-Col. T. H. MacDonald, Canadian A.M.C.
Major G. M. Davis, Canadian A.M.C.
Capt. W. J. Enright, Canadian A.M.C.
Capt. A. V. Leonard, Canadian A.M.C.
Capt. G. L. Sills, Canadian A.M.C.

Missing.

Capt. W. A. Rees, R.A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Lieut. J. Findlay, R.A.M.C. attached Worc. Regt.
Capt. J. M. McKenzie, M.C., R.A.M.C., attd. Northd. Fus.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported:—

Capt. N. C. Swift, D.S.O., M.C., East Lancashire Regiment, youngest son of Dr. H. Swift, of Adelaide, South Australia.

FOREIGN DECORATIONS.

Belgian.

Croix de Guerre.—Capt. F. D. Annesley, R.A.M.C., S.R.; Temp. Capt. A. Climie, R.A.M.C.; Temp. Capt. R. A. H. Fulton, R.A.M.C.; Lt.-Col. H. C. R. Hime, D.S.O., R.A.M.C.; Temp. Capt. G. D. Maclean, R.A.M.C.; Col. C. C. Manifold, C.B., C.M.G., I.M.S.; Capt. (acting Lt.-Col.) W. Tyrrell, D.S.O., R.A.M.C., S.R.; Col. A. E. Ross, C.M.G., Canadian A.M.C.; Maj. J. H. Wood, Canadian A.M.C.; Capt. C. C. Simson, M.C., Australian A.M.C.; Lt.-Col. J. H. Neil, New Zealand M.C.

MEDICAL PRACTITIONERS AND AN APPEAL AGAINST GRADING.

The position of the medical practitioner who is not satisfied with his grading by a National Service Medical Board is practically that of any other man liable to military service. He may make an application to the Appeal Tribunal for the district in which he lives for leave to be re-examined and graded by the Medical Assessors. The application is required to be made not later than five clear days after the date on which written notice of his grading by the National Service Medical Board is given or sent to him, unless the Appeal Tribunal, for good reason shown, allow an application to be made after that period.

Such examination is, however, quite different from re-examination by a National Service Medical Board. If a practitioner desires to be re-examined by a National Service Medical Board the Ministry of National Service is usually willing for this to be done upon application being made to that department.

AUXILIARY R.A.M.C. FUNDS.—The usual quarterly meeting of the committee was held at 11, Chandos-street, W., on July 12th, Major Ewan Maclean being in the chair. Amongst other members present was Major-General T. H. Goodwin, Director-General Medical Services. From the benevolent branch for the relief of children of officers of the Auxiliary R.A.M.C. who died as a result of the present war grants were made in three cases. The amount granted was £176. Grants from the relief branch for the relief of the widows and orphans of the rank and file of the Auxiliary R.A.M.C. were also made. Subscriptions and applications for relief from either branch should be made to the honorary secretary, Auxiliary R.A.M.C. Funds, 11, Chandos-street, Cavendish-square, W. 1.

THE LANCET, VOL. I., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 29th is in preparation. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

Medical News.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR THE DEGREES OF M.B., CH.B.

William Peach Taylor.

Part I. only (including Forensic Medicine and Toxicology).—Frederick Viel Jacques.

DIPLOMA IN PUBLIC HEALTH.

Alan Gabriel Bodman.

SECOND EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

Edward James Tucker.

UNIVERSITY OF LIVERPOOL.—The following degrees were recently conferred upon the undermentioned:—

DOCTOR OF MEDICINE.

Mikhail Azer, Clement Alston Hughes, Isaac Jacob Lipkin, Thomas Glynn Morris, Jaffir Rumjahn, and Rattan Chaud Watts.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Victor Isadore Levy, Frank Atkinson Prosser, and George Seymour Swan.

At recent examinations for the Diploma in Public Health (D.P.H. Liverp.) the following candidates were successful:—

E. H. T. Cummings, G. H. Darlington, J. Drummond, I. J. Lipkin, H. E. Middlebrooke, K. J. Rustomjee, and R. C. Watts.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE, SCHOOL OF PHYSIC.—At examinations held recently the following candidates were successful:—

INTERMEDIATE MEDICAL EXAMINATION.

Part II., Applied Anatomy and Applied Physiology.—*Cecil Emrys McQuade, George Hall Davis, *John Henry Brenell Crosbie, Isaac Levy, and Mary Horan.

FINAL MEDICAL EXAMINATION.

Part I., Medical Jurisprudence and Hygiene, Materia Medica and Therapeutics, Pathology.—*James Sinclair Quin (high marks), Thomas Donald Gordon (high marks), Harris Cohen (high marks), William Theodore Micks (high marks), Henry Alfred Burridge (high marks), *Charles John de Vere Shortt, William James Alexander Russell, Eileen Hilda Dowse, Christopher John Lawrence Brock, William Burton Fox, Samuel John Laverty, Richard Esmonde Murphy, Jessie Gilbert, and Olive Balle.

Medical Jurisprudence and Hygiene, Materia Medica and Therapeutics.—James Alexander Acheson, Samuel Reginald Hill, *Gerald FitzMaurice Keatinge, and *Frederick William Robertson.

Part II., Medicine.—Arthur Leslie Gregg, Percy Crowe Parr, John William Scharff, Lindley Albertyn, Jason Grant Bird and *Stanley Cyril Mitchell (equal), Louis John Patrick Murphy, *William James McClintock, *David Shields Prentice, Eric Reginald Tivy, Charles Going Ambrose, Benjamin Damer Merrin, Kenneth McGregor Greer, and Eric James Lyndon and Margaret Wolfe (equal).

Surgery.—John William Scharff, Edward Francis Wilson, Robert Meade Daly Devereux and Ernest Edward Rollins (equal), *William James McClintock, Rita Henry, James Edward Jameson, *Victor Millington Synge, and Benjamin Damer Merrin.

Midwifery.—Mary Christina Sheppard, Lindley Albertyn, Ethel Marjorie Luce, *Frank McGregor Ferguson, Robert Meade Daly Devereux, and Eric Reginald Tivy.

DIPLOMA IN PUBLIC HEALTH.

Part I.—James Beckett and Edgar Ormond Bowie.

Part II.—Robert Arthur Keane.

* Formerly Surgeon-probationer in the Royal Naval Medical Service.

The following awards have been made:—Fitzpatrick Scholarship: Harry Lee Parker. Medical Scholarships: Anatomy and Institutes of Medicine, Eric Henry Cooke Allen; Botany, Zoology, Chemistry, and Physics, David Sheridan Spence. Dr. Henry Hutchinson Stewart Scholarships: Anatomy and Institutes of Medicine, Adrian Johannes Louw Snyman and Essie Stuart Smyth (special, for two years); Botany, Zoology, Chemistry, and Physics, Dorothy Alice Daly. John Mallet Purser Medal: George Hall Davis. Cunningham Medal: Edith Florence Willock.

UNIVERSITY OF ABERDEEN.—The following degrees were conferred at the recent Graduation ceremony:—

DOCTOR OF MEDICINE (M.D.).

Alexander William Hendry.

BACHELOR OF MEDICINE (M.B.) AND BACHELOR OF SURGERY (CH.B.).

Joseph Alexander, William Buchan, William Adams Coutts, *John Alexander Dawson, *Alexander Mathieson Dugan, †George Septimus Escoffery (first-class honours), Isabella Ferguson, Alexander Campbell Hill, Mabel Gordon Lawson, Robert Douglas Lockhart, Alexander McKenzie, James Wallace Mann, John Morrison, Alexander Cowie Paterson, John Alexander Ross, *Agnes Loudon Semple (second-class honours), James Charles Sleigh, Sophia Kent Grant Stuart, and Gwendolen Jean Elmslie Wilson.

DIPLOMA IN PUBLIC HEALTH (D.P.H.).

Henry Reah.

* Passed Fourth Professional Examination with distinction.

† Passed Fourth Professional Examination with much distinction.

The John Murray medal and scholarship were awarded to Dr. George Septimus Escoffery.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A quarterly meeting of the Council was held on July 11th, Sir George Makins, the President, being in the chair.—The President reported the result of the meeting for the election of four members of Council on July 4th, as already published in THE LANCET of July 13th. He further stated that Mr. Lynn Thomas, being fourth on the poll, became substitute member for Sir William Watson Cheyne until July, 1925.—Sir John Bland-Sutton, Mr. W. G. Spencer, Mr. Lynn Thomas, and Mr. Hey Groves were introduced, made declarations in the terms of the oath prescribed by the Charter of 1800, and took their seats in the Council.—Lieutenant-General Sir Arthur Thomas Sloggett, K.C.B., K.C.M.G., K.C.V.O., A.M.S., was introduced, and after signing the by-laws and making the required declaration, was admitted a Fellow of the College.—Sir Berkeley Moynihan, C.B., was congratulated by the Council on being made Knight Commander of the Most Distinguished Order of St. Michael and St. George.—Diplomas of Membership were granted to three successful candidates.—It was resolved to grant, jointly with the Royal College of Physicians of London, diplomas in public health to six successful candidates.—A letter was read from Mr. Edward A. Dunn thanking the Council for their resolution of condolence on the death of his brother, Mr. L. A. Dunn.—The President reported that in pursuance of a suggestion which had been made to him he had taken steps to transmit the following message of greeting to the French nation *à propos* of the celebration of "France's Day" on July 12th in London, and on July 14th in Paris:—

From the President and Council of the Royal College of Surgeons of England.

"Brothers in Arms, we greet you! Bound by ancient ties of blood and by the memories of many a gallant contest in the past, to-day we stand as one nation united in a sacred cause. We have before us a sacred presage from the past. As the united efforts of Pasteur and Lister have laid low the tyranny of disease, so shall France and Britain conquer a tyranny still more remorseless. Our future brightens and shall endow Gaul and Briton with a common birthright to remain a splendid heritage for all time."

The following professors and lecturers were appointed:—

Hunterian Professors:—Arthur Keith: Six lectures on Hunter's Chief Discoveries; Gordon Taylor: Abdominal Wounds of Warfare; A. J. Walton: The Surgery of the Spinal Cord in Peace and War; David Ligat: The Significance and Surgical Value of Certain Abdominal Reflexes; T. B. Layton: The Surgical Aspects of the Collection and Transport of Wounded; Alexander Fleming: The Power of Chemical Antiseptics and of the Natural Physiological Processes in Septic Wounds; E. G. Schlesinger: The Treatment of Compound Fractures and other Severe Injuries of the Upper Limb.

Arris and Gale lecturers:—E. M. Corner: The Nature of Scar Tissue and Painful Amputation Stumps; E. M. Cowell: The Initiation of Wound Shock and its Relation to Surgical Shock; J. C. Briscoe: The Mechanism of Post-Operative Collapse of the Lungs.

Arnott Demonstrator:—Arthur Keith: Six demonstrations on the Contents of the Museum.

Sir George Makins was re-elected President and Mr. Haslam and Sir John Bland-Sutton were elected Vice-Presidents.

EPSOM COLLEGE.—The Council of Epsom College announce that there will be a vacancy for an Entrance Salomons Scholarship of £50 at the beginning of the Michaelmas term. The conditions of holding the scholarship are that the candidate shall show an adequate standard of education for his age and that his financial position is such as to make it impossible or difficult to obtain an education at the College without the help of the scholarship. Applications should be sent to the secretary at the office of the College, 37, Soho-square, W. 1, by July 29th.

DONATIONS AND BEQUESTS.—The late Miss Grace Ross Cadell, L.R.C.P. & S. Edin., has left by will £150 a year for life to each of her four foster-children, with remainder as to the capital sum to their children, or, failing issue, the capital in respect of the two female children to be paid to the University of Edinburgh for the medical education of women there, and in the case of the boys to the Edinburgh Medical Department. She also left, among other bequests, £2000 to the Edinburgh Hospital for Women and Children; £1000 to the Queen's Nurses in Scotland; £300 to the Leith Branch of the Queen's Nurses; and £100 to Leith Hospital. The residue of the property to be equally divided between the University of Edinburgh to help in the medical education of women and the Edinburgh Hospital for Women and Children.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Asylums Officers' Superannuation Bill.

Mr. BRACE, the Under Secretary to the Home Office, on July 16th introduced a Bill to make further provision for the application of the Asylums Officers' Superannuation Act, 1909, to officers in certified institutions for defectives and to provide for the aggregation of service in asylums and in such institutions. It was read a first time.

Medical Treatment of School Children.

After the Education Bill had passed its report stage in the House of Commons on Tuesday, July 16th, it was formally recommitted in respect of Clause 2 (development of education in public elementary schools). An amendment was agreed to which provided that it should be the duty of a local education authority amongst other things "to make adequate and suitable arrangements under the provisions of paragraph (*b*) of subsection (1) of Section 13 of the Education (Administrative Provisions) Act, 1907, for attending to the health and physical condition of children educated in public elementary schools." By the rules of the House it was found impossible to make an alteration of this kind imposing a public charge during the report stage of the Bill, and this is the reason for the formal recommittal in order to carry out the pledge regarding the medical treatment of school children.

Midwives Bill.

The Midwives Bill has been read a third time in the House of Lords.

HOUSE OF LORDS.

WEDNESDAY, JULY 17TH.

A Ministry of Health.

Lord WILLOUGHBY DE BROKE called attention to the desirability of establishing a Ministry of Health without undue delay; and moved "That this House urges His Majesty's Government to introduce at an early date a Bill to constitute a Ministry of Health." He made a long speech urging the necessity of coördination of the health functions of the various Government departments, and pressed the establishment of a Ministry of Health as a matter of war emergency.

Viscount HALDANE seconded the motion.

Viscount PEEL, in his reply for the Government, pointed out that the separation of the functions of local government from health questions would present many difficulties. The problem was extremely complex. He admitted that he felt some difficulty in giving a precise reply upon the motion because the matters which it concerned were now under the very close consideration of a Government Committee. That Committee was sitting again on the following day (Thursday), and if it had come to a decision his task would have been very much easier. If he did not offer resistance to the motion it must be understood that the words "at an early date" would be given a very large and liberal interpretation.

The motion was agreed to.

HOUSE OF COMMONS.

WEDNESDAY, JULY 10TH.

Indian Medical Service.

Colonel YATE asked the Secretary for India whether he had considered the representation submitted by officers of the Indian Medical Service, and whether he could make any statement on the subject.—Mr. MONTAGU replied: Through the courtesy of my honourable and gallant friend I have seen the paper to which he refers, and I have also received numerous other representations regarding the position of officers of the Indian Medical Service. The other day I received a deputation from the British Medical Association on the same subject. I recognise the importance to the Government and the people of India of an efficient and contented medical service, and I have undertaken to give the questions which have been raised in this connexion careful and prompt consideration. I am in communication with the Government of India on the subject.

Medical Officers at Malta.

Mr. R. MCNEILL asked the Under Secretary for War how many Army doctors were quartered at Malta; what had been the average number of patients in hospital there during the last 12 months; whether any of the doctors in Malta had been there for more than 18 months without coming home on leave; and, if so, whether he would arrange that doctors who had been in Malta for such a period should now come home on leave and be then employed on duty at home or in France.—Mr. MACPHERSON answered: Medical officers stationed at Malta have the same privileges as regards leave as other officers serving abroad. It is not proposed to bring home officers who have served for 18 months at Malta, but applications for transfer will receive consideration.

Treatment of Discharged Men in the West Riding.

Colonel ASHLEY asked the Pensions Minister whether he was aware of the lack of institutional accommodation for discharged men needing treatment; that in the West Riding alone there were some 792 men who were unable to obtain treatment owing to lack of accommodation; and what steps he proposed to take to remedy this state of affairs.—Mr. HODGE answered: I am aware that there is still in some parts of the country a lack of accommodation for the treatment of discharged men, and various measures to meet the need are being taken. The reports from the local War Pensions Committee show the need in the West Riding to be particularly marked.

Treatment of Tuberculosis in London.

Mr. BOOTH asked the President of the Local Government Board whether he had received a copy of the resolution passed by the London Insurance Committee in June making certain stipulations as to the practicability of a comprehensive scheme for the treatment of tuberculosis in London; and whether he had summoned a conference of representatives of the committee to meet those of the County Council.—Mr. HAYES FISHER replied: The answer to both parts of the question is in the affirmative. The conference was held this morning.

THURSDAY, JULY 11TH.

Panel Practitioners and Medical Certificates.

Mr. ALBION RICHARDSON asked the representative of the National Insurance Commissioners whether he was prepared to make arrangements to enable a man summoned to appear before a medical board, who could not afford to pay a fee to his panel doctor for a certificate stating his medical history, to obtain such a certificate free of charge.—Colonel GIBBS (on behalf of Sir E. CORNWALL) replied: The furnishing of such a certificate as is referred to in the question would, of course, be entirely outside the scope of a medical practitioner's agreement for services under the National Insurance Acts, and he would therefore be under no obligation to furnish it. Moreover, it is a fundamental principle that any information as to the state of health of an insured person which may come into the possession of a doctor by whom he is attended under the provisions of the National Insurance Acts is strictly confidential, and is to be used for national health purposes only. In these circumstances it does not appear possible that such arrangements as the honourable Member suggests should be made under National Health Insurance, nor be paid for from National Health Insurance funds.

Mr. ALBION RICHARDSON: Will the honourable and gallant gentleman make representations to the Government as to the great injustice which this causes to poor men who cannot afford to pay for a medical certificate in being deprived of their only opportunity of laying their medical history before the medical board, and put in a much worse position than those who can afford to pay for a certificate?—Colonel GIBBS: Perhaps my honourable friend will put down a question to the Minister of National Service.

Mr. ALBION RICHARDSON: I will put it to the Prime Minister.

Medical Students.

Mr. HOLT asked the Minister of National Service how many male medical students under 28 years of age there were in the United Kingdom; and what steps were being taken to provide a supply of male doctors in the immediate future.—Sir AUCKLAND GEDDES said in reply: I regret that I cannot state how many male medical students under 28 years of age there are in the United Kingdom. There are, however, at present 5380 male medical students and 2250 female medical students at work in the schools and hospitals. The male students freshly registered in 1917 numbered 1378, as against 1366 in 1914.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: J. A. L. Cook, G. Blarton, G. B. Lowe.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel G. G. Delap relinquishes the temporary rank of Colonel on re-posting.

To be acting Lieut.-Colonels (while specially employed): Major R. V. Cowey, Temp. Major J. C. Davies (while in command of Medical Units), Capt. (acting Major) C. H. Denyer, Capt. J. Rowe, Temp. Capt. G. D. Hindley.

Relinquishing the acting rank of Major on re-posting: Lieut. (temp. Capt.) H. A. Rowell, Temp. Capts. T. Russell, H. F. Sheldon.

To be acting Majors: Capts. F. S. Tamplin, C. McQueen, M. O. Wilson, W. Mathieson, H. W. Carson, M. White, F. G. A. Smyth, W. L.

Webster, G. S. Parkinson, G. O. Chambers, R. Gale, E. C. Beddows, R. E. Todd, A. D. Stirling, A. L. Robertson, T. I. Dun, W. V. Corbett, S. M. Hattersley, J. C. A. Dowse, A. H. Heslop, T. H. Balfour, O. W. McSheehy, S. D. Large, F. G. Thatcher, F. R. Laing, E. B. Marsh, T. J. Kelly, N. Cantlie, J. H. Pendered, C. de W. Gibb; Temp. Capts. M. Bates, J. I. P. Wilson, W. J. J. Arnold, C. L. Spackman, W. H. D. Smith, N. I. Sinclair, W. H. Sheffield, J. W. C. Gunn, R. H. Strong, E. E. Chipp, G. Stiell, A. R. Muir, E. R. D. Maconochie, E. B. Smith, L. ap I. Davies, T. F. Saunders, R. Massie, P. W. Hampton (whilst specially employed), M. P. Paton, E. J. Selby, L. R. Broster, F. B. Winfield, L. Meakin, B. Whitehead, W. H. Alderton, L. Anderson, J. R. M. Whigham, D. E. Crosbie, A. H. Spicer, A. E. Knight, G. Rankine, A. P. Saint, A. S. K. Anderson, A. K. Cosgrove, R. M. Handfield-Jones, H. B. G. Russell, W. S. S. Berry, H. G. Kilner, J. Biggam, C. J. H. Sharp, R. S. Dickie; Lieuts. (temp. Capts.) W. T. Hare, M. B. King, D. Pottinger, A. E. Richmond, J. W. O'Brien, C. Russell, L. G. Bourdillon, H. A. Rowell, B. Catford.

D. Cairns, late temporary Captain, is granted the honorary rank of Captain.

Temp. Hon. Lieut. H. Halsted to be temporary Honorary Captain.

Lieut. H. C. Hinwood, Spec. Res., to be temporary Lieutenant.

Officers relinquishing their commissions: Temp. Capts. A. F. Mavety, B. N. Murphy, C. S. Glegg, W. R. Hodge; Temp. Hon. Capts. E. V. Jones (on ceasing to be employed with Welsh Hospital, Netley), S. McC. Boyd (on ceasing to be employed with British Red Cross Society in France); Temp. Lieuts. A. H. Collins, C. Murray, W. Smith; Temp Hon. Lieut. H. D. Havard.

Canadian Army Medical Corps.

Temp. Major P. K. Menzies to be temporary Lieutenant-Colonel.

To be temporary Captains: W. J. Grant, K. M. B. Simon, D. E. S. Wishart.

SPECIAL RESERVE OF OFFICERS.

Major (temp. Lieut.-Col.) J. Mackinnon to be Lieutenant-Colonel.

Captains to be acting Lieutenant-Colonels whilst in command of a Medical Unit:—(Acting Major) C. N. Gover, W. H. L. McCarthy.

F. Jefferson relinquishes the acting rank of Major on re-posting.

Captains to be acting Majors: A. R. F. Clarke, A. B. Mitchell, J. H. Beverland, D. S. Martin, P. Walsh, J. A. Hill, J. M. Darling, M. W. Paterson, W. F. McLean, D. C. MacDonald, J. G. McCutcheon, J. Walker, A. J. Clark, J. Vallance, G. F. P. Gibbons, G. Dalziel, K. K. Drury, A. J. Gibson, A. Wilson, D. Dougal, E. A. Mills, H. G. Penny.

Capt. E. R. Chambers and Capt. B. Shires to be acting Majors whilst specially employed.

Capt. H. M. Clarke is seconded for service overseas.

TERRITORIAL FORCE.

Lieut.-Col. R. A. Wraith to be an Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

Capt. (temp. Major) H. F. W. Boeddicker relinquishes his temporary rank on alteration in posting.

Capt. B. Robertshaw, from T.F. Res., to be Captain.

Capt. J. E. W. MacFall relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Major.

Capt. W. C. Hodges to be acting Major whilst specially employed.

Capt. (acting Major) W. C. Hodges relinquishes his acting rank on ceasing to be specially employed.

Capt. (temp. Major) F. Philip to be Major.

Lieut. C. D. Mathias to be Captain.

Capt. (acting Major) H. J. Gorrie relinquishes his acting rank on ceasing to be specially employed.

Captains to be acting Majors whilst specially employed:—G. B. Eadie, H. Duguid, G. B. Gill, G. E. J. A. Robinson, S. S. B. Harrison, J. Dundas, S. J. C. Holden, F. E. Withers (and remain seconded), F. L. A. Greaves, B. M. Footner, R. Fullarton, W. H. Rowell, A. Ramsbottom, D. J. Scott, H. M. Calder, F. W. C. Brown, S. S. Greaves, A. G. Hebblethwaite, S. J. Clegg, W. H. Davison, J. Dale, J. M. Hamill, L. R. Tosswell, O. W. D. Steel, W. D. Frew.

Capt. (acting Major) H. J. A. Longmore, relinquishes his acting rank on ceasing to be specially employed, and remains seconded.

Capt. (acting Major) J. H. P. Fraser to be acting Lieutenant-Colonel whilst commanding a Field Ambulance, and remain seconded.

Surg.-Maj. H. Skelding, from Yeomanry, to be Major.

Major (Brevet Lieut.-Col.) F. E. A. Webb to be acting Lieutenant-Colonel whilst specially employed.

Capt. (acting Major) T. W. S. Paterson relinquishes his acting rank on ceasing to be specially employed.

Captains to be acting Majors whilst specially employed: J. G. Cooke, M. S. Doubble, A. W. Berry, A. P. Thomson, E. V. Connellan, A. Jones.

Capts. (acting Majors) A. W. Berry and A. Jones relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Major) H. A. Macmillan to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Capt. G. A. Auden is restored to the establishment on vacating the appointment as Deputy Assistant Director of Medical Services.

Lieutenants to be Captains: F. J. E. China, L. Hawkes, H. L. Robinson, T. M. Ormiston.

Capt. R. O. Sibley is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Capt. (acting Major) G. E. St. C. Stockwell to be Major.

Capt. A. W. Harrington is seconded for duty with a General Hospital.

Capt. (temp. Major) A. Don relinquishes his temporary rank on ceasing to be specially employed.

Capt. H. L. Gregory to be Major.

Capt. J. Saffley, from T.F. Res., to be Captain.

TERRITORIAL FORCE RESERVE.

Lieut.-Col. W. A. Benson, D.S.O., from R.A.M.C., to be Lieutenant-Colonel.

Major C. W. Edwards, from R.A.M.C., to be Major.

Capt. H. J. Wheeler, from R.A.M.C., to be Captain.

Capt. W. E. Falconar, from R.A.M.C., to be Captain.

ROYAL AIR FORCE: *Medical Branch.*

Lieut. N. F. Stallard to be Captain.

Granted temporary commissions:—As Major: A. Paling. As Captains: J. B. Guthrie, C. S. Dowdell. As Lieutenants: E. L. Bunting, A. Read.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The first article in the June number of this journal is a report from the Hygienic Department of the Royal Army Medical College by Major A. G. R. Foulerton on the Pathology and Treatment of Poisoning by Trinitrotoluene (T.N.T.) and on the Action of Certain other Poisons which Affect Metabolism. His measures for the protection of the worker from undue exposure to the action of the poison include the avoidance of fatty foods and their replacement in the dietary as far as practicable by sugars; and the elimination of any trinitro-toluene already fixed in the fatty constituents of the skin by frequent baths, followed by brisk friction of the skin.—In Malaria in Macedonia, with Especial Reference to the Use of Prophylactic Quinine, Captain C. H. Treadgold concludes that small doses of prophylactic quinine, not too long continued, are of proved utility to the natives of malarial countries, both in the absence of anti-mosquito measures, and when such measures are incomplete, and that quinine may be given with advantage to immigrants under certain conditions, but, speaking generally, he holds that quinine prophylaxis in the absence of protection against mosquito bites is little more than a pious fraud perpetuated from one generation to the next, because public opinion has not been sufficiently enlightened to encourage the working out of the problem on scientific lines.—Captain F. B. Chavasse discusses "Myalgia" (a term originally introduced in order to rescue a certain class of case from the heading "rheumatism"), its Diagnosis in Forward Areas; Captain W. Waddell deals with Post-Dysenteric Diarrhœa; and Lieutenant-Colonel Gordon Holmes continues his paper on the Symptoms of Acute Cerebellar Injuries as Observed in Warfare.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-urinary Diseases, S.W.—H.S.

Birmingham, Erdington Infirmary and House, and Selly Oak Infirmary and House.—Locums. £7 7s. per week.

Birmingham University.—Sen. Demonstrator of Anatomy. £250.

Bristol Royal Infirmary.—H.P. and H.S. £120.

Bromley Education Committee.—Temp. School M.O.

Bury and District Joint Hospital Board.—Asst. Med. Supt. £450.

Bury Infirmary.—Jun. H.S. £200.

Dudley, Guest Hospital.—Asst. H.S. £120.

Great Northern Central Hospital, London, N.—H.S. £100.

Hospital for Consumption and Diseases of the Chest, Brompton.—Asst. Res. M.O. £100.

Hospital for Sick Children, W.C.—H.S. £100.

Kensington and Fulham General Hospital, S.W.—Res. M.O. £250.

Leeds, Neurasthenic Hospital for Pensioners, Allerton Hall.—M.O. £400.

Liverpool, Township of Toxteth Park, Poor-law Institution and Infirmary.—Asst. Res. M.O. £300.

Manchester County Asylum, Prestwich.—L.T. £7 7s. per week.

Metropolitan Hospital, Kingsland-road, E.—L.T. £5 5s. per week.

Pinewood Sanatorium, Wokingham, Berks.—Asst. M.O.

Queen's Hospital for Children, Hackney-road, E.—M.O. for Elect. Dept.

Reading, Royal Berkshire Hospital.—H.S. £250.

Royal Air Force.—Female M.O. 24s. a day.

St. Albans, Herts County Asylum.—Temp. Asst. M.O. 7 guineas a week.

Scottish Women's Hospitals (N.U.W.S.S.).—Female Chief M.O. for Camp Hospital in Macedonia. £400.

Sheffield City Education Committee.—Asst. School M.O. £400.

Sheffield Royal Hospital.—H.P. £140. Also Cas. O. £135.

Sheffield Royal Infirmary.—H.S. £120. Also H.P. £120.

South London Hospital for Women, S.W.—Female Temp. Asst. P.

Stoke-on-Trent County Borough.—Asst. Tuberc. O. £360.

Walsall Education Committee.—L.T. Sch. Med. Insp. £400.

Wilts County Council.—Oculist and Asst. School M.O. £400.

York County Hospital.—Female H.S. £200.

Births, Marriages, and Deaths.

MARRIAGES.

STEVENS—EARLE.—On July 10th, at St. Peter's, Belsize Park, London, N.W., John Barr Stevens, M.D., Major, R.A.M.C.(T.F.), to Mabel, only daughter of the late Major-General W. H. S. Earle, Bengal Staff Corps.

VICKERY—JOHNSON.—On June 27th, 1918, at Lisburn Cathedral, by the Reverend Canon Carmody, Captain Edward Percival Hadden Vickery, R.A.M.C., youngest son of Dr. and Mrs. Vickery, Kinsale, to Gladys Ruth, third daughter of the late Mordecai Johnson, of Greystones.

DEATHS.

CONSTABLE.—On July 6th, in a nursing home in London, Samuel Constable, L.S.A. Eng., son of the late Rev. J. Nicolson Constable, B.A.T.C.D., Rector of Swinford, Co. Mayo, aged 62 years, of West Green, N., and Ballyglasheen House, Clonmel, Co. Tipperary, deeply lamented by his wife and family.

GAUNTLETT.—On July 3rd, at Cilfynydd, Pontypridd, Owen Binns Gauntlett, M.R.C.S., L.R.C.P., aged 40.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

AMERICAN MEDICAL ASSOCIATION.—Sir James Mackenzie, Sir W. Arbuthnot Lane, and Colonel Herbert A. Bruce attended the recent annual meeting of the Association at Chicago as representatives of the British Government. Addresses on the part played by the medical profession in the war were given to large audiences at Cincinnati, Chicago, Toronto, Boston, and other cities. Sir Arbuthnot Lane delivered an address, reported in full in the *Chicago Evening American* of June 13th, on the treatment of facial injuries, describing the work of the Queen's Hospital at Sidcup.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of June 29th.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, July 22nd.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

BRITISH ORTHOPÆDIC ASSOCIATION, at the rooms of the Medical Society of London, 11, Chandos-street, W.
FRIDAY, July 26th.—10 A.M., President's Address:—Mr. E. M. Little. 10.30 A.M., Discussion on the Indications, Technique, and End Results of Tendon Transplantation in Gunshot Injuries of Nerves (opened by Capt. T. P. McMurray). 2.15 P.M., Mr. J. J. Clarke: Demonstration of Special Instruments for the Open Operation for Congenital Dislocation of the Hip. Major S. A. Smith: The Preparatory Treatment of Amputation Stumps. Other Short Communications by members of the Association.
SATURDAY.—Discussion on the Abbott Treatment of Scoliosis (opened by Mr. D. M. Aitken).

ROYAL SANITARY INSTITUTE, in the Council Chamber, Town Hall, Ipswich.
SATURDAY, July 27th.—11 A.M., Discussions:—Housing, from the Point of View of Economy in Planning and Construction (opened by Sir Henry Tanner), and on the Provision of Maternity Homes (opened by Dr. A. M. N. Pringle). 2 P.M., Visits to the Public Health Office, Sanatorium, Fever Hospital, Electricity Station and Destructor, Small-pox Hospital, and New Water Works.

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

Offices: 423, STRAND, LONDON, W.C. 2.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. G. R. Anderson, Southport; American Red Cross Institute for Crippled and Disabled Men, New York, Director of; Mr. R. B. Atkinson, Cambridge.
B.—British Orthopædic Association, Lond., Hon. Sec. of; Capt. G. Ball, R.A.M.C.(T.); Major A. S. G. Bell, R.A.M.C.; Dr. W. Langdon Brown, Lond.; British Drug Houses, Ltd., Lond.; Dr. N. D. Bardswell, Lond.; Rev. P. Brocklehurst, Giggleswick; Dr. W. A. Brend, Lond.; Sir J. W. Byres, Belfast; Mr. J. Barcroft; Lieut.-Col. G. S. Buchanan, R.A.M.C.
C.—Mr. G. E. Cottrell, Lond.; Mr. J. Cabburn, Lond.; Mr. T. E. Coulson, Templecombe; Dr. E. L. Collis, Lond.; Dr. J. B. Christopherson, Khartoum; Dr. E. Chichester, Colchester; Dr. H. R. Carter, Lond.
D.—Dr. H. Dutch, Lond.
F.—Mrs. Bedford Fenwick, Lond.; Capt. F. Fraser, R.A.M.C.
G.—Dr. H. J. Gauvain, Alton; Mr. R. T. Glazebrook, Teddington; Capt. F. Golla, R.A.M.C.
H.—Major H. Hemsted, R.A.M.C.; Mr. W. F. Higgins, St. Margaret's-on-Thames; Hospital Sunday Fund; Dr. H. Head, Lond.; Major W. E. Home, R.A.M.C.; Prof. I. W. Hall, Bristol; Sir T. J. Horder, Lond.
I.—Italian Æronautical Mission.
J.—Mr. G. J. Johnston, Lond.; Mr. C. J. Jones, Lond.
K.—Dr. H. C. Kidd, Bromsgrove.
L.—London Fever Hospital, Sec. of; Dr. C. E. Lea; Mr. J. B. Lamb, Lond.; Dr. C. Lillingston, Peppard Common.
M.—Dr. N. Macleod, Shanghai; Mr. John D. Marshall, Lond.; Dr. E. McIntyre, Mitcham; Mr. F. S. Miles, Hove; Mr. G. Mayall; Mrs. F. McQuiban, Torquay; Dr. J. C. Matthews, Lond.; Capt. E. P. Minett, R.A.M.C.; Dr. H. H. Mills, Lond.
N.—Prof. G. H. F. Nuttall, Cambridge; Mr. J. O. Newman, Lond.
O.—Dr. Isabel Ormiston, Lond.; Sir William Osler, Bart., Oxford.
P.—Mr. J. Penoyre, C.B.E., Lond.; Capt. A. H. Priestley, R.A.M.C.; Dr. P. N. Panton, Lond.; Sir A. Pearson, Lond.; Mr. R. H. A. Plimmer, Lond.; Dr. O. F. Pedroso, Lond.; Mr A. J. Patrick, Lond.; Polytechnic Touring Association, Lond.
R.—Dr. J. L. Roux-Berger, Paris; Royal Medical Benevolent Fund, Lond., Sec. of; Major H. M. Rashbrook, R.A.M.C.; Mr. J. C. Russell, Edinburgh; Royal College of Physicians of Ireland, Dublin, Registrar of; Royal Sanitary Institute; Dr. R. J. Rowlette, Dublin; Royal Society, Secs. of.
S.—Prof. W. Stirling, Manchester; South London Hospital for Women, Sec. of; Major J. J. M. Shaw, R.A.M.C (S.R.); Société de Biologie, Paris; Society of Apothecaries, Lond.; Mrs. K. Senter, Edinburgh.
T.—Capt. W. J. Tulloch, R.A.M.C.; Mr. A. Thornton, Marlborough.
U.—University of Aberdeen, Sec. of; University of Liverpool; University of Dublin, School of Physic, Registrar of.
V.—Mr. S. K. Valdya, Lond.
W.—Dr. C. H. Whiteford, Plymouth; Dr. F. Wyatt-Smith, Lond.; Dr. Neville Wood, Lond.; Dr. E. Ward, Paignton; Dr. L. D. Weatherly, Bournemouth; Mr. S. Webb, Lond.; Asst.-Surg. H. F. Warren, U.S.N.; Col. W. H. White, A.M.S.; Miss H. Wyldon, Bideford.

Notes, Short Comments, and Answers to Correspondents.

TRIPLEX GLASS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Jan. 12th you published a letter on triplex glass written by me, and I can now supplement the account then given with illustrations which speak for themselves.

Fig. 1 shows the result of a trial which I myself made by shooting from a distance of 30 yards at glasses fixed on a board. The glass is starred and its surface broken into small pieces, but there are no splinters and no shot went through. The illustration shows the glasses made up into spectacles.

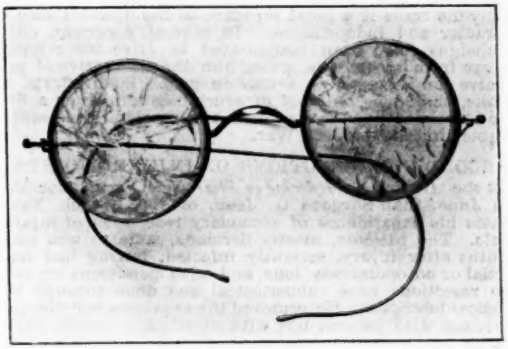

Fig. 2 shows the wind-screen of a motor-car struck by nine shrapnel bullets from a shell which burst quite near. Only one bullet perforated the glass, and this did not travel beyond the hole which it made.

Triplex glass is now being widely used for eye protectors for our fighting men, but as yet its use for glasses designed to correct anomalies of refraction has not become general; indeed, it is almost confined to private practice. I am in the habit of advising everyone who has to wear glasses for going about to have them made of triplex glass. The lenses are said to be more difficult to grind and the expense is greater, but the immunity from injury is quite worth the extra outlay. Opticians tell me that the difficulty in grinding is slight, except in the case of deep curves, and, as I pointed out in my previous communication, this can easily be overcome by fixing a flat plate of triplex in front of the lens of ordinary glass remedying the anomaly of refraction. There is more difficulty when it is required to grind lenses on the glass of protectors. This takes an enormous amount of time, and can only be done by a highly skilled workman. But it is unnecessary. There is no difficulty whatever in wearing protectors over the glasses used for visual purposes, in the same way as a lady who wears glasses pulls her veil down over them.

Difference of opinion exists as to the best colour for protective spectacles in Eastern countries. I have tried blue, neutral, chlorophyll, and Stokes's, without finding any difference whatever in the acuity of vision, even when the darkest shades were used. I have experimented on myself and found no difference in looking at test types or distant objects. I could see just as well through coloured glasses as without, but darkest chlorophyll shade was the most comfortable to the eyes. Some attempt is being made to determine which is the most suitable dye to use. Would it not be better to find out which dye can be procured at once and in sufficient quantity, and to use it?

I am, Sir, yours faithfully,

CHARLES HIGGENS, F.R.C.S.

Brook-street, W., July 13th, 1918.

CRIPPLES AND BEGGARS.

THE American Red Cross Institute for Crippled and Disabled Men calls attention to the prevalent confusion in the public mind between the idea of a cripple and that of a beggar, with resulting injury to the cause of the self-respecting disabled man who is regarded as a subject for charity rather than for trade training and employment. A recent report of the London Mendicity Society states that many thousands of pounds are squandered every year on street beggars in London alone, and crippled beggars seem also to be in evidence in New York streets, for Mr. Douglas C. McMurtrie, director of the Institute, writes:—

We have seen many cripples at street corners, making public exhibition of their deformity or amputation and soliciting alms of the passers-by. The number of these beggars is small in comparison to the great body of physically handicapped men who are usefully employed, but the few have vigorously advertised, have made a considerable impression on the susceptibilities of the community, and have reaped a profitable harvest. A bank teller reported recently the case of a crippled street beggar who deposited in a savings' account, after paying his living expenses, 40 dollars weekly.

Mr. McMurtrie contends that permitting the beggar cripple to ply his trade is a great injustice to the disabled men of character and independence. In several American cities campaigns have been inaugurated to drive the crippled beggar from the streets, giving him the alternative of productive employment or a stay in gaol. Such efforts, he thinks, should be imitated in every community as a first step in preparation for the return of the soldiers and sailors disabled in the European War.

SECONDARY RESECTIONS OF INJURED JOINTS.

IN the *Archives de Médecine et Pharmacie Navales* for May and June, Staff-Surgeon G. Jean, of the French Navy, relates his experiences of secondary resections of injured joints. The patients, mostly Serbians, came to him some months after injury, seriously infected, having had only partial or no operations done, and with persistent sinuses. The resections were subperiosteal and done through the classical incisions. He removed the sequestra and diseased bone, not with gouges, but with electrically driven burrs. But he thinks the after-treatment as important as the operations. The surgeon must do the dressings himself, must himself adjust and watch the plaster splint, taking care it is not too soon removed from a leg or too long left on an arm. Especially must he see that passive movement is begun as soon as ever it is required, and above all he must encourage his patients so that they shall determine to be cured. Results were naturally better in the upper extremity. Nine of 11 shoulders, 9 of 11 elbows, and all of 3 wrists were saved from amputation: 8 of the hip cases were lost, but 5 of 12 knee-joints and 5 of 7 ankles made good recoveries, and Dr. Jean obtained good results in 16 operations on the foot. The cases are all reported and will repay perusal.

THE ALBUMIN REACTION IN SPUTUM.

REFERRING to the annotation on this subject in THE LANCET of June 22nd, a correspondent calls our attention to the fact that since the French Navy does not issue microscopes to ships albumin reaction is used as their *discrimen*. The test is a good one for this purpose. It does not distinguish pneumonia from tubercle, but it does differentiate either from mere bronchitis.

A THERMOMETER FOR THE BLIND.

UP to the present time no thermometer has been invented that can be read by the tactile sense. The matter is of practical importance, as many blind men have entered on occupations in which it is necessary to know the exact temperature record. The Association Valentin Haüy pour le Bien des Aveugles (9, rue Duroc, Paris) is therefore offering a prize of 1000 francs for the best apparatus enabling the blind to read temperatures.

RATS AND PLAGUE.

AT a recent conference, held at Ipswich, of representatives of the sanitary, military, and naval authorities in East Suffolk Dr. G. I. T. Stewart, county medical officer of health, stated that although the regular examination of rats had been discontinued owing to the circumstances of the war, an outbreak of plague had been anticipated by the sanitary authority and the Local Government Board. On behalf of the Board Colonel Edmund Wilkinson pointed out the need for systematic destruction and examination of rats throughout the county. An Order had been issued by the Board to this end, and all except two of the local authorities in the county were carrying out the Order. For the Sampford district it was pointed out that 108,000 rats had been destroyed in a single year, and for the Woodbridge rural district 16,000 since last Christmas. The conference concluded by passing a resolution in favour of a vigorous and concerted campaign for the destruction of rats and the closest possible coöperation for this purpose between the civil, naval, and military authorities.

DELPHINIUM POISONING.

"Delphinium poisoning" was returned as the cause of death by a coroner's jury at Brentwood in the case of an inmate of the Essex County Asylum who died after eating part of a delphinium plant in the asylum airing court. It was stated at the inquest that owing to a fatality last year hollyhocks had been removed from the grounds, but it was not considered that delphiniums were dangerous.

This plant, with its tall spikes of generally pale blue flowers, is a common garden flower. Delphinium, or larkspur, as it is called, produces seeds which yield delphinine for destroying lice. The name of delphinium is derived from a fanciful resemblance of part of the flower to a dolphin, and the name of larkspur from the spur-shaped formation of calyx and petals. In popular parlance the name larkspur is confined to the smaller varieties. Delphinium is included by the Germans in their "Giftpflanzen" or poisonous plants under the name of "Scharfer Rittersporn," besides being called "louse-seed." In THE LANCET of Oct. 29th, 1887, a note on delphinine appeared, of which the following is an excerpt:—

The plant yields four alkaloids, of which the chief one, delphinine, occurs as an amorphous powder of yellowish colour and resinous aspect, and having the chemical formula $C_{20}H_{35}NO_6$. The parts of the plant usually employed therapeutically are the seeds, which contain the great part of the active principles. The seeds have for a long time been employed against psoriasis and as a vermifuge. Delphinine acts chiefly on the nervous system, and first upon the bulb, next upon the sympathetic. It produces at first a functional excitation, then, by graduated attenuation, a diminution and complete but transient abolition of sensation. It is said to be preferable to aconitine, because it is so much less toxic. On the motor nerves delphinine has no action in physiological doses, but in toxic quantity their functions are entirely abolished, causing incoördination with ataxia. The alkaloid acts also on the heart, accelerating the cardiac movements, until finally arrest occurs in diastole.

IMPROVED NOVARSENOBENZOL PREPARATIONS AND APPARATUS.

WE have received from Messrs. Modern Pharmacals, of 48, Mortimer-street, London, W. 1, specimens of (1) an outfit for the concentrated intravenous injection of novarsenobenzol (914), and (2) an apparatus for the intramuscular injection of glucarsenol, a solution of novarsenobenzol in glucose with stovaine and guaiacol. The former outfit consists of a special vial of novarsenobenzol, an ampoule of distilled water sterilised and deprived of air and a suction filter. The technique is simple and conveniently carried out in a few minutes in the apparatus provided. The injection is prepared by pouring the contents of the ampoule of water into the vial containing the novarsenobenzol. The solution is drawn into the syringe by means of a small glass tube containing a filter of sterile gauze which fits on the syringe. This outfit is known as the "coneosan" outfit.

The glucarsenol is supplied in an ampoule syringe ("ampsyring") containing a sterilised solution. Glucose, it is stated, furnishes a liquid of thicker consistency than the aqueous solution, and, though slowly, is surely absorbed. It is said to produce no pain, and the slowness of absorption diminishes the pain due to the arsenical drug, the analgesics, guaiacol and stovaine, assisting. In addition, glucose is a reducing agent, and thus to some extent protects against oxidation.

FRANCO-AMERICAN SURGICAL APPLIANCES.

WE have received a brochure of 90 pages dealing with the apparatus manufactured by the *Comité Franco-Américain contre les Impotences Fonctionnelles* (at 17 Rue Boissonade, Paris) and supplied gratuitously to the sanitary formations of the French Army. President of the managing committee is the hospital surgeon, M. Paul Reynier, who states in a prefatory note that 18 months after outbreak of war, almost all the Paris orthopædists and surgical instrument manufacturers having been requisitioned by the State, no source of supply was available for apparatus urgently required in cases of contracture, nerve paralysis, resection, and such conditions. On referring to the American Ambulance at Neuilly he obtained the services as technical director of Miss Grace Gassette, a Chicago artist of much mechanical ingenuity who had gained her experience in splints and bandaging at the Ambulance. Mrs. John F. Bass and Mr. E. Norman Scott, of Chicago, coöperated in finance and administration with the result that the production of surgical appliances on a large scale was rapidly brought to a high degree of efficiency. In the brochure Médecin Aide-Major G. Houzel describes the apparatus with abundant illustrations. Many of the splints are of familiar type, but the whole brochure forms an admirable survey of the field, and will well repay study by surgeons who have to deal with injured limbs and the correction of deformities. All the types of apparatus provided by the Comité are stated to be *déposés* or *brevetés*.

R. B. A. appears to have been misinformed.